OCTOBER
1953

DIGEST

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DANIEL MALAN leads the Afrikaners to the end of the road. After 300 years, aparthied holds South Africa fast . . p15

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PLASTICS will speed tooling for next year's automobiles in the U. S. The new method is ideal for short runs, saves on machining p52

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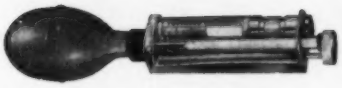

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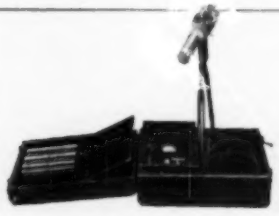

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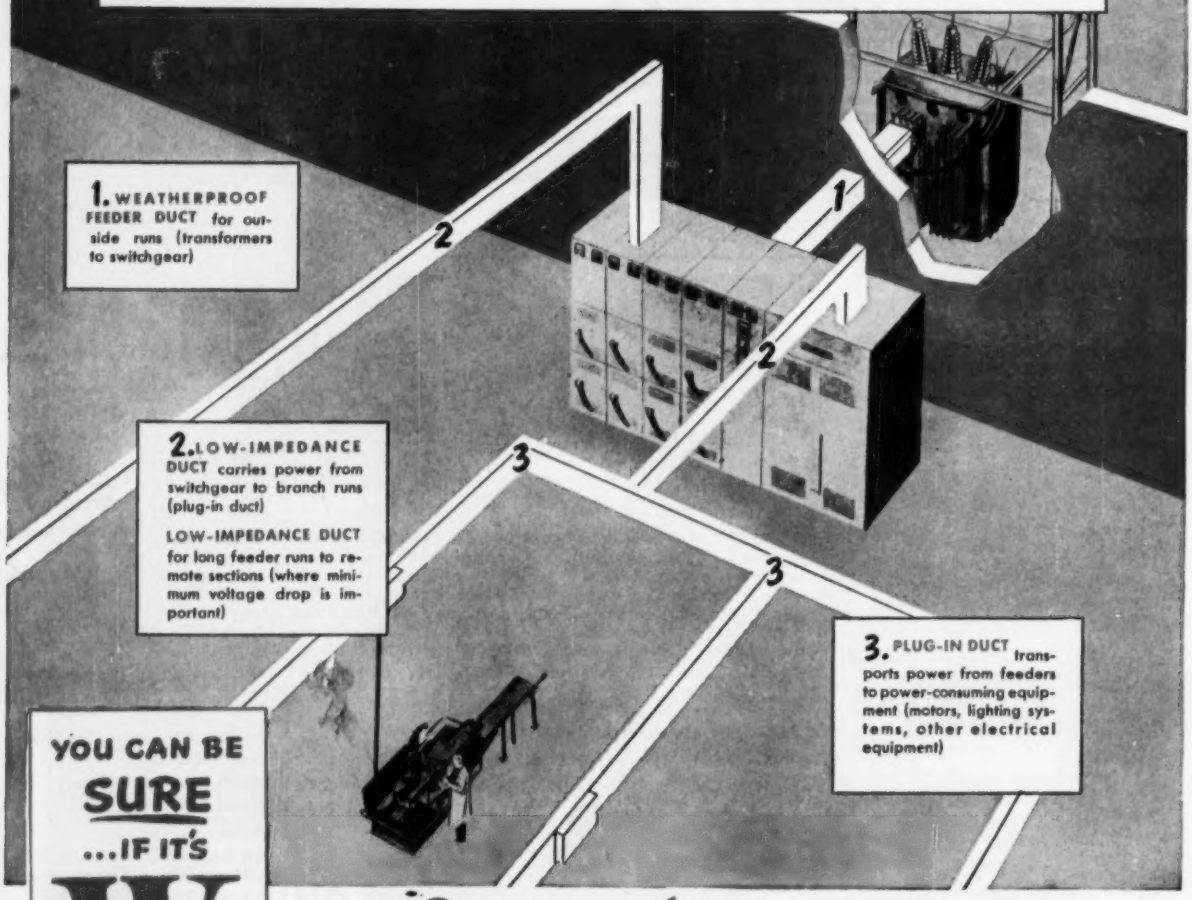
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Would you like to save up to 50% of the cost of materials going into your metal products? Delco-Remy Div. of General Motors Corp. did just that—by substituting cold forming for other fabrication methods. On page 37 you'll find how cold extrusion of generator frames eliminated all machining of the inside diameter.

Or do you use paper-board containers in your business? If so, you'll want to know about a new built-in carton spout and how it's formed. Licenses are available for its use. The spout was developed by Henry Phillips, who won fame for inventing the Phillips recessed-head screw. This story is on page 42.

The answer to a problem facing many plants is on page 36. Incandescent lights give off a lot of heat—often too much for many processes going on below. So American lighting experts recommend high-frequency fluorescent lights. They give off even less heat then regular fluorescents as they have no ballasts.

If you're hot, consider the cotton coat on page 35. It's flameproofed and takes up to 800°F.

And remember—if you want more information about any of these items, please write us.

Sincerely yours

Harry S. Wharen

Editor

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. . . the best from 48 business magazines—see p60

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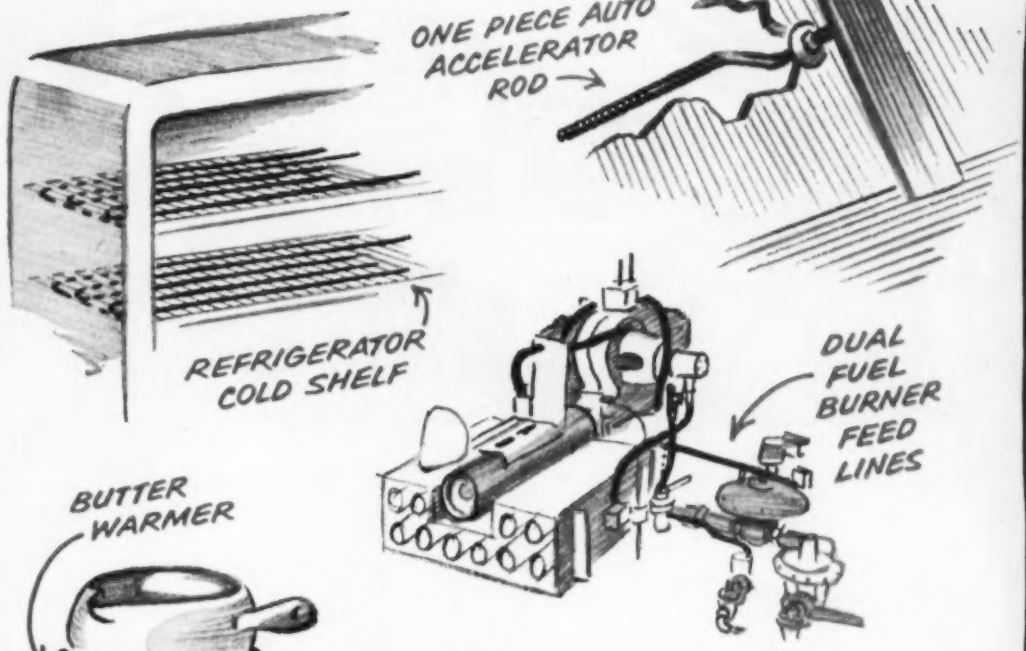

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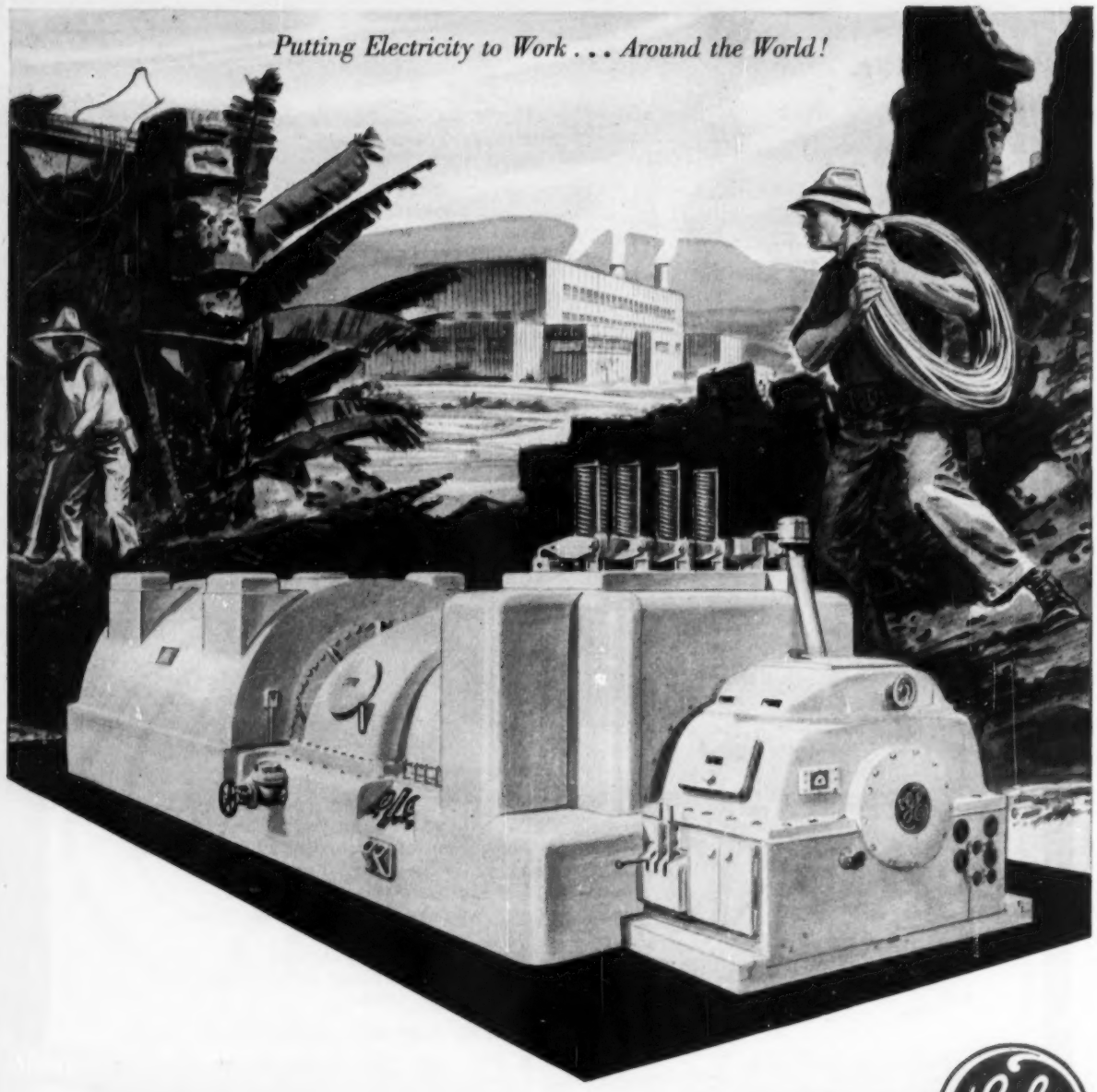

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BUSINESS TRENDS

BUSINESS OUTLOOK for several nations will be altered by Korean truce. Only a few countries will escape economic effects of end of hostilities. A break-down of the trend in a dozen markets follows:

Argentina is showing definite signs of improvement. Gold and exchange reserves have risen steadily to over $750-million—the highest in 6 years. Grain stocks are the largest since 1950. New acreage sown this year will exceed 1952 total. Look for substantial business with Russia and large grain sales to Germany, Brazil, Chile, and Paraguay.

Brazil's deep-rooted exchange crisis remains grave. But measures recently adopted by the new finance minister to arrest skyrocketing inflation and a shaky currency situation are working. Outlook is still for unprecedented austerity and rigid exchange controls. Cost of living has increased 15% this year. Brazil faces trouble in selling products abroad because of high prices. Purchases from U. S. have been cut to $190-million in first 6 months of 1953, compared with $472-million in 1952.

Canadian shipments in the second half of 1953 will recede further in value. Lower prices on metal exports is the reason. U. S. defense contracts for aluminum, copper, and nickel will be cut. Farm-equipment and wood-pulp sales will be lower. But over-all exports still will be around $4-billion for the entire year.

Colombian coffee crop will be heavy. Neither civilian nor military demand for this leading exchange earner will be affected by truce. So coffee exports will stay at present mark—30% above last year's level. Climbing gold and dollar holdings have advanced 40% in a year. West Germans, Swiss, and French will compete strongly with U. S. for Colombian market.

Cuban sugar sales to the U. S. will hold at practically the same level, and business conditions in Cuban trade will improve slowly. Some unemployed are being absorbed by sugar derivative industries. Department stores sales are down. But substantial gold and dollar reserves remain a cushion against any economic setback.

France is rapidly sinking into deeper chaos. Key to nation's immediate future is Indo-China. Break-off of hostilities in Korea will prompt more U. S. aid, but not enough to relieve tremendous French burden. Devaluation of franc is just a matter of a short time. Government must relinquish some control of business and change tax collection system before any progress will be noted.

Germany will soon resume payments on debt service of foreign-owned securities. Trends emphasizing restoration of Germany as good credit risk are: (1) Notes in circulation covered by gold and exchange reserves are at a new peak of 60%. (2) Balance-of-payments position with dollar area is now favorable. (3) Surplus at European Payments Union has reached $628-million. (4) Production is up 8% this year and 50% over 1936. (5) Unemployment is at a 5-year low.

Adenauer administration will expand trade with Far East in preference to doing business with Soviet satellites. Further steps toward convertibility of Deutsche Mark are in the offing.

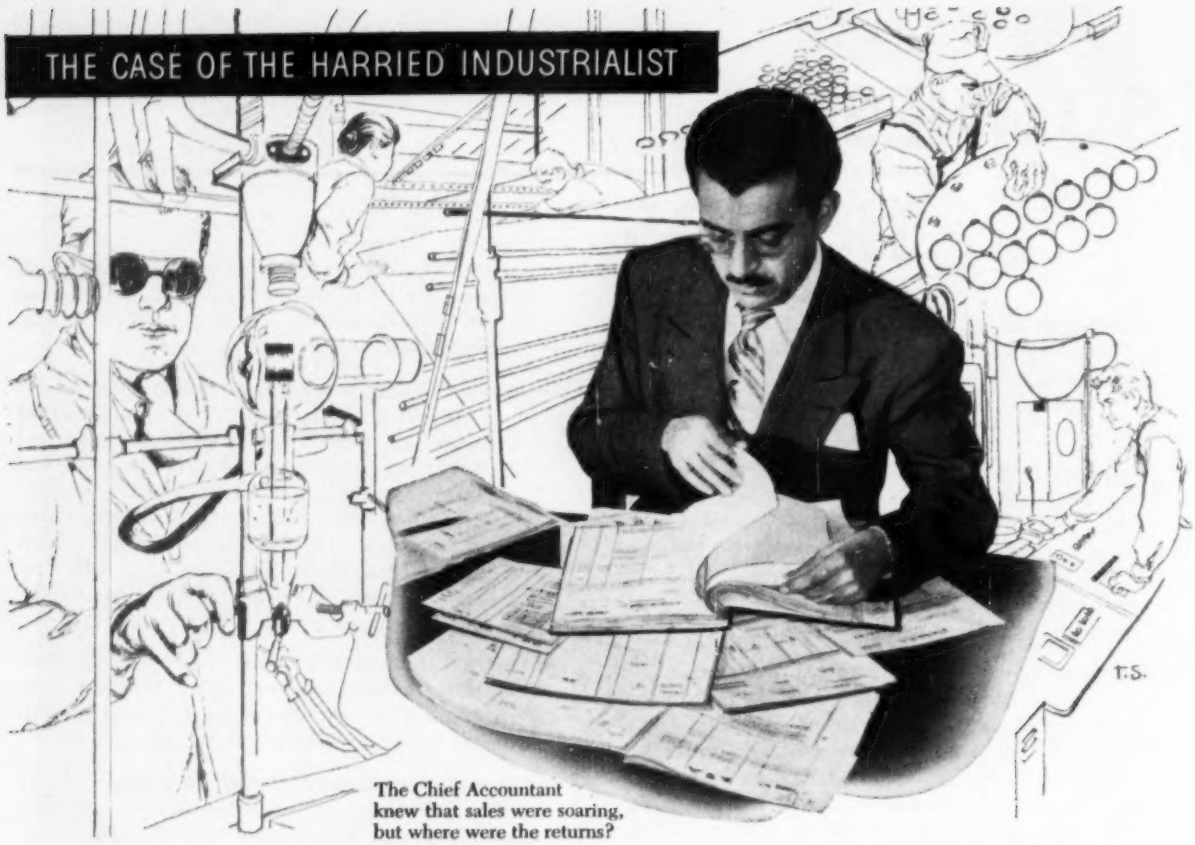
Indonesia will make concerted effort to put economy on firmer footing. New measures should hold payments deficit to $100-million in 1953. This compares with import surplus of $325-million last year. Look also for greater farm output, more incentives for foreign investment, lower export duties.

Italy's currency position has been relieved by recent jump in exports. Government will increase imports of heavy equipment, machinery, and raw materials fo: new 4-year plan. Korean truce will revive China trade. Italy will supply China with textiles, fertilizers, and pharmaceutical products in exchange for oils, seeds, and raw materials.

Japan's boom in domestic consumption will continue to end of year. Efforts will be made to recapture old trading markets with China. New six-point export bonus plan will become effective soon. Among incentives to exporters will be permission to use sterling balances against goods purchased from dollar area.

Philippine economic progress, although limited, is noticeable. Import licenses now are unnecessary, with all items on letter-of-credit basis. Prices of such exports as copra, hemp, and textiles have receded since truce. Export sales will expand.

United Kingdom chances for trade expansion and convertibility are greatly enhanced by Korean truce. Sterling-area trade balance has shown profit each month since start of year. Production is up 10%. Already unemployment has been reduced by 170,000 this year. Look for broader commercial relations with the East.



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WASHINGTON REPORT

NEW U. S. TRADE POLICY, to be prepared for Congressional consideration next year, has been given a good start. Washington feels that President Eisenhower will propose a general liberalization of trade between the U. S. and the world.

The President's selection of his own "public" representatives on the Foreign Economic Policy Commission weighs the 17-man commission on the side of lower tariff and other trade barriers. With Inland Steel President Clarence Randall as chairman, the commission's recommendations seem fairly certain to have an "internationalist" flavor. And ex-Ambassador Lewis Douglas' strong recommendation for sponsoring more foreign trade, released in mid-August, laid down a pattern for the Randall commission.

Washington had been anxious about whom Eisenhower would name as his representatives on the commission. His decisions were crucial because the senators and representatives named by Congress have a distinct protectionist flavor.

The White House took great care in picking. Five of the six public members will favor more trade, with only one, Cola G. Parker, chairman of the board of Kimberly-Clark Corp., Neenah, Wis., a high-tariff man. And he is regarded as an "enlightened protectionist."

Eisenhower's appointments line up the 17-man commission this way: Senate appointments three to two for more protection; House, three to two for more protection; White House, six to one for more free trade. This divides the commission ten to seven on the side of freer trade. So you can look for Eisenhower next year to get a report saying that the U. S. must foster freer exchange of goods among its friends if straight-out aid is ever to be stopped.

OFFSHORE PROCUREMENT, the buying of arms and equipment abroad, is likely to reach $1.5-billion during fiscal year 1954. Sentiment in Washington is behind offshore buying. For one reason, the program is likely to support or subsidize the most efficient industries under the NATO concept.

Also, the idea is getting cooperation of U. S. manufacturers. The arrangement between Raytheon Mfg. Co. with the Microlambda Corp. of Naples (McG-H Digest, Aug, p13) is just one example of what can be accomplished.

While this arrangement centers around the manufacture of radar and other electronic devices of a military nature, the feeling is that similar licensing deals can develop a potential civilian market for television and radio sets. And if U. S. manufacturers extend the principle to other forms of manufacturing, they are likely to develop foreign subsidiaries and foreign markets for their products. Any risk involved is almost certain to be assumed by the U. S. government, which virtually underwrites the offshore procurement contracts as necessary inducement to manufacturers.

The outlook for Congressional reaction to future foreign aid is poor. Letters from constituents tell U. S. Congressmen that public sentiment is all in favor of a diminishing foreign-aid program. So Congress is likely to emphasize offshore procurement as a means of getting out of direct economic support to foreign nations. The main premise would be that once the U. S. gets domestic manufacturers working with foreign companies and helping them onto a more solid footing, the U. S. will be able to withdraw economic support gradually.

President Eisenhower also is behind the program to get foreign manufacturers turning out arms for NATO. That's why Congressional attention is likely to be turned to offshore procurement as a test of European intent. If the scheme works out, it will provide Congress with the means to shift from direct economic grants to a kind of a "pay-as-you-go" basis for arms aid that promises an end to dollar support.

U. S. DECISION to take part in the international conference on a world tin price scheme was a last-minute affair. The State Department officially watered down its announcement with a statement to the UN International Tin Study Group that the U. S. cannot promise to ratify a tin price treaty even if one is achieved by the Tin Study Group.

Most State Department officials, however, privately advocate U. S. participation in a support scheme. They feel that if a formal treaty is not achieved, with consumer representation, the producing countries will work up a price agreement among themselves.

U. S. industry is divided. For the most part, tinplaters are for participation, alloy producers against. The alloy people dislike the cartel features and fear the government controls that would be needed to enforce an international agreement. Tinplaters consider a treaty a necessary evil and are willing to go along, at least for the present, with the State Department's private argument for market stability.

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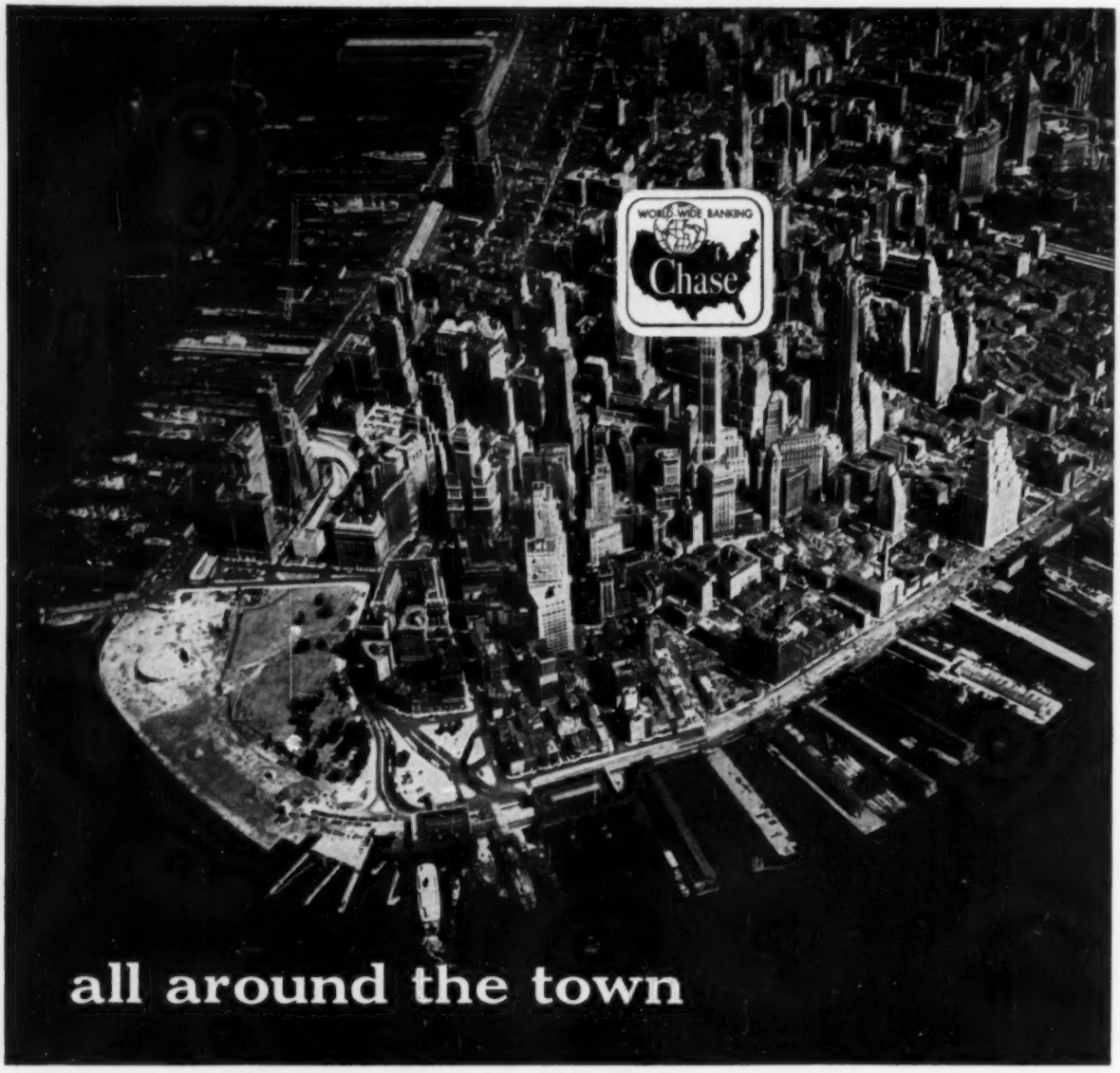

East Side, West Side—piers, hundreds of them, provide New York with the greatest harbor facilities in the world. Ocean-going vessels, docking at the rate of 12,000 a year, have made the Port of New York a gigantic funnel through which pours about half of America's trade with the rest of the free world.

It's no accident that the financial and shipping districts are located side by side in downtown Manhattan: *they work hand in hand.* The "Big Three" of foreign commerce—the importer, the exporter and the transporter—all depend upon commercial banks that are organized to serve the financial interests of customers on a national and international scale.

Such a bank is Chase National with headquarters in the center of New York's financial and shipping districts. From here, Chase service reaches out through its correspondent banks (the most extensive system in the U. S.) into all 48 states. Overseas, Chase has branches and representatives' offices in Europe, the Far East and Latin America and, in addition, maintains close working relationships with leading banks in the markets of the world.

If you have a foreign trade problem, why don't you talk to the people at Chase?

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OCTOBER 1953
VOLUME 8 • NUMBER 10

McGRAW-HILL
DIGEST

BANANA UNLOADER, digging stems out of ship's hold at a fast pace, is one of the most productive machines in bustling, modern port of New Orleans

WATCHING PORT ACTIVITIES are Clay Shaw, manager of International Trade Mart; F. Berbigier, visiting French economist, and J. H. Boyd of Foreign Trade Zone

Port of New Orleans: It Has . . .

A Sound Formula for Success

To pull itself back up among top U. S. port cities, New Orleans needed only a simple plan—and several years of hard work.—An original Digest article

PORT BUSINESS is so good in New Orleans these days that people find it hard getting used to it. There is little left of the leisurely Old South, except perhaps for hospitality and charm. The new New Orleans is bristling with smokestacks, and heavy machinery lines the docks that used to ship food stuffs and cotton exclusively.

In 8 years, the port has made a striking rise from fourth to second place (dollar-wise) among the nation's ports. And it is still climbing.

Sugar, molasses, jute, sisal, bananas, bagging materials, corn, lube oils and greases, and heavy machinery, all showed a healthy increase again last year—even though the national average showed an 11% dip in imports and only a 7% rise in exports.

Behind these facts there is a story of civic cooperation and sagacious public relations dating back to 1940. Beginning with a state election that broke up a colossal political machine, the port's fortune took a turn for the better.

The first thing the new administration, headed by then Governor Sam Houston Jones, did after taking office was to clean out the port's ineffectual management. The casualties were mostly political appointees, but before the job was finished, over 2,000 people had been fired, most of whom "rarely came to work."

Next, the governor appointed five commissioners to run the port and keep it out of politics. The position of commissioner is not salaried and usually it means losing business because commissioners are not allowed to do business with the port. But this has not prevented high-caliber New Orleans businessmen from serving on the board. They consider it an honor to be asked.

"Why not," one ex-member said, summing up the general feeling,

"Out of this union . . . is emerging the diversity New Orleans needs."

"If it hadn't been for this board and what it's done, we'd still be just another spot on the bayou." (A creek or river is called a bayou in Louisiana.)

These strong, decisive moves encouraged some of the more nimble businessmen, like the old-time owners of the Mississippi Shipping Co., Rudolph Hecht and the late Theodore Brent; E. O. Jewell, a progressive cotton merchant; William Zetzmann, a prosperous soft drink bottler; and a few others. Together, they evolved "The Pattern" to do two things:

- Sell the merits of New Orleans hard and fast.
- Lay out long-range plans to entice northern industry to New Orleans.

As further encouragement, the pressure of war was by this time (1941) pushing heavy equipment through New Orleans at an unprecedented rate and the port was handling it to everyone's satisfaction.

By 1943 the port had risen to a point where some New Orleans people knew they had potentially one of the world's busiest ports, and it was not hard for businessmen to sell the idea for the now world-famous International House to the city's citizens. It was mostly from bond sales to people all over Louisiana that the money was raised for this mecca of international trade.

165,000 Sales Contacts

In 1945 the original five-floor International House gave way to the present ten-story building. To date, it has been the scene of some 165,000 buyer-seller contacts and is responsible for many millions of dollars' worth of good will.

Among its advantages: free multi-lingual secretarial service, air-conditioned offices, contact services. It even has educational facilities for people who want to get into international trade but are dazed by its complexities.

Still following "The Pattern," the port commission, early in 1947, set up Foreign Trade Zone No. 2. The zone is simply a fenced-in area, physically within the port limits, but legally outside the realm of U. S. Customs. Goods brought there and deposited can be stored, transhipped, mixed, bottled, graded, assembled, manufactured, manipulated in any way, and are not subject to Customs until they are ready for entry.

The International Trade Mart was built in 1948 by the same group that put up International House. Again many of the bonds were bought by New Orleans doormen, secretaries, and clerks.

They spent wisely: As an investment, the mart is doing its share to insure that next year, as last, 70¢ of every dollar spent in the city will come from the port. Figuratively, the building is a concrete display case five stories tall where anyone can rent space and display whatever he may have to sell. The fee is as low as $330 a month.

To prove that it actually works, Clay Shaw, manager of the Trade Mart, tells a story about a Dutch merchant who wanted to sell pottery and jewelry. He went to the Trade Mart, set up an appealing display, and in a few days had sold $13,000 worth of his merchandise.

The port itself is mechanically modern with the latest conveyors and elevators spread along the water front. Eight-and-one-half miles of quay-type wharfs stretch along the bank parallel to the river and are accessible without tugs. The publicly owned belt railroad serves the dock area, connecting it with eight trunk lines. Freight rates are favorable, and the last instance of a major labor threat was in 1933.

While International House, the Foreign Trade Zone, and the International Trade Mart were putting a firm base under a business New Orleans already knew, its good-will ambassadors were out spreading the advantages of Louisiana among northern industrialists and learning how big business operated.

Back in Louisiana, the legislature was making things easy for industry by exempting new or expanding companies from tax payments. Municipalities were given the right to build factories to house new business and to charge low rents for them.

So far this "Industrial Inducement" plan has helped bring $200-million dollars worth of industry into New Orleans and has shot the local payroll up over 600%.

Good Public Relations

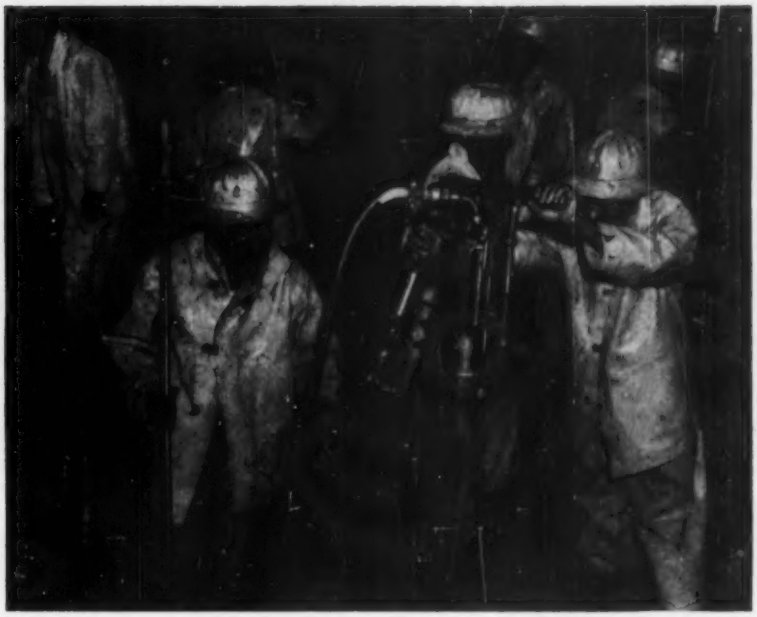
As a flourish to its ambitious plan, the Port of New Orleans has been using a polished public-relations campaign they call the "Good Neighbor" plan. It involves bringing key people—bankers, chamber-of-commerce representatives, brokers, merchants—from all over the world to New Orleans and showing them around the harbor in a yacht.

Along the river banks where once there were woodlands, they can see the busy new plants of leading companies in every industry. A partial list: Commercial Solvents Corp., U. S. Industrial Alcohol Co., Celotex Corp., General Chemical Co., Johns-Manville Corp., International Harvester Corp., Texas Oil Co., Continental Can Co., Standard Oil Co., Swift and Co., Davidson Chemical Corp., Delta Match Co.

And the plants are not regional storehouses comprising one or two buildings. They are big, some even claim the superlative, biggest. Kaiser Aluminum plant has just reached capacity output of 200,000 tons of aluminum a year on its new multi-acre site. It is the largest of its kind in the U. S.

Out of this union of good port and big business is emerging the diversity New Orleans needs.

One of the port's biggest boosters is state Governor Robert F. Kennon, who says he expects New Orleans will someday be the "Detroit of the chemical industry." And it's not an idle boast, as anyone in New Orleans will try to prove to you with the kind of enthusiasm that is responsible for all the big things happening to the "Crescent City."



Prime Minister Daniel F. Malan: All of South Africa's Resources Are at His Fingertips

South Africa: Gold No Cure

Blessed with plenty of minerals, South Africa is in trouble getting them out of the ground. Its troubles are many and present policies may make them impossible to solve.—An original Digest article

JOHANNESBURG—In the eyes of many people throughout the world, the Union of South Africa is on the threshold of realizing its destiny. For 300 years, the Afrikaner, descendants of the first Dutch settlers, have struggled for complete independence. Somehow, they have never really won—until now.

For their leader, the Afrikaners now have a man whose single purpose is to restore command over all the sub-continent of South Africa to the white man—especially the Afrikaner. Can he do it? What does he have to work with? Here are some of the answers and some of the problems he faces.

From a primary producer of raw materials, the Union of South Africa has rapidly grown into a country possessed of considerable industrial activity. But with this industrial revolution have come many problems.

African laborers are streaming into the cities from farms, mines, and reserve lands. As a result, farmers and mine operators are finding themselves hardpressed for adequate manpower. The cities fare little better. Huge "black spots" have risen, and with them have come huge social problems.

Prime Minister Daniel F. Malan's government is determined to end this situation. Apartheid (separatism) is its instrument. Stripped of all its trimmings and propaganda, apartheid means simply this: African, Indian and Colored populations should not be integrated in any way into the social, political and economic life of the European community. Malan's party, the Nationalists, hopes, through apartheid, to force the non-European peoples into distributing themselves among farms and industry.

The United Party, in opposition, criticizes the Nationalists' application of apartheid, but in doing so does not produce any concrete solution to the problem. Conflict between the two parties has brought about extreme tension in the political atmosphere. And this tension is causing a depressing effect on the country's economy.

One bright spot exists, however. Recent signs seem to show that moderates of both parties may get together. Political peace over the next few years would go far toward easing the economic problems facing the country.

Two major problems face South Africa. One is an acute labor

"Today's gold-mining profit is the lowest in history."

shortage. The other is an unfavorable balance of trade.

As far as labor is concerned, there is just not enough skilled labor to go around. Canada, Australia, and South America seem more attractive to emigrant skilled labor from Europe. For unskilled labor, South Africa must draw Africans from the neighboring territories. But the supply is limited because these areas are also developing rapidly. And political considerations bar efficient use of African labor already available.

In world trade, South Africa cannot continue to spend abroad on its present scale unless its exports are increased or the import of non-capital goods is reduced. Rigid import controls continue to be exercised. But this is not regarded as a panacea. The Governor of South Africa's Reserve Bank suggests lessening the restrictions on imports from the dollar area. He feels that fewer restrictions would widen the field of competition for the Union's import trade and help reduce the general cost structure.

Gold is still the maior export. Producing mines have the capacity for substantial additional production but are handicapped by not having enough labor and power. New mines under development further aggravate this.

What might be done would be to slow down both industrial and mining development until a better balance between current production and development can be established. It might help also if the country's industrial growth were curbed long enough to allow the producing mines to get up to full capacity and to wait until uranium production gets underway. The latter is expected to contribute $110-million a year to South Africa's economy.

The Union's tremendous expansion, compressed into virtually the last 10 years, has strained the capital and labor resources of the country to its utmost. The 20 new gold mines alone will eventually cost nearly $1-billion before they begin producing. While industry gained, public services lagged largely as a result of major delays in the delivery of capital equipment from overseas and competition for money and labor in the private sector of the economy.

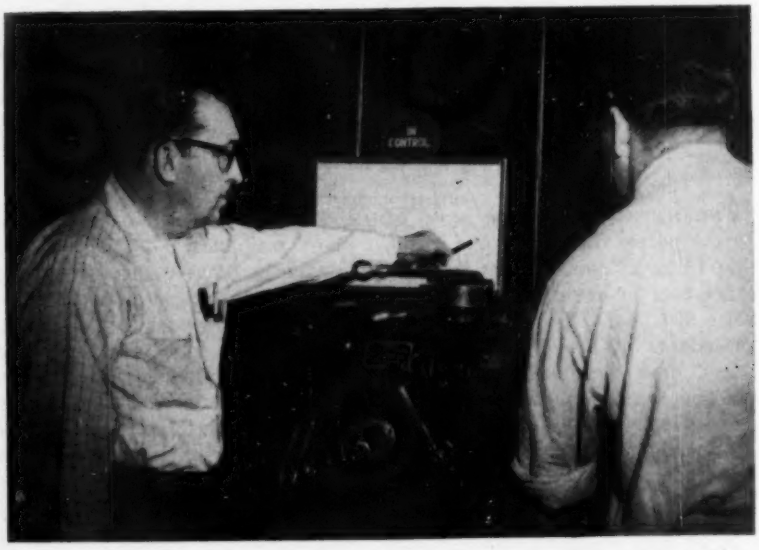
The situation in power generation illustrates how industrial expansion got out of control. The installed generating capacity in South Africa totals about 1.7-million kw. New plant in construction and on order will increase this by an additional 2-million kw. over the next 3 years. This additional capacity will be sufficient only to break even with the present demand. If the country progresses further, more power will be needed.

The gold-mining industry is feeling the effects of the Union's generally high prices. Profit margins are steadily being cut—today's profit is the lowest in the history of the industry. And, of course, the labor and power shortages are taking their toll.

Present operating capacity of most mines is about 80%. Not only does the country lose vital foreign exchange, but also the low profits of the mines are hitting shareholders and government revenue alike. New mines with richer ores are opening up, but it will be several years before they get into full swing—and then only if the labor shortage eases.

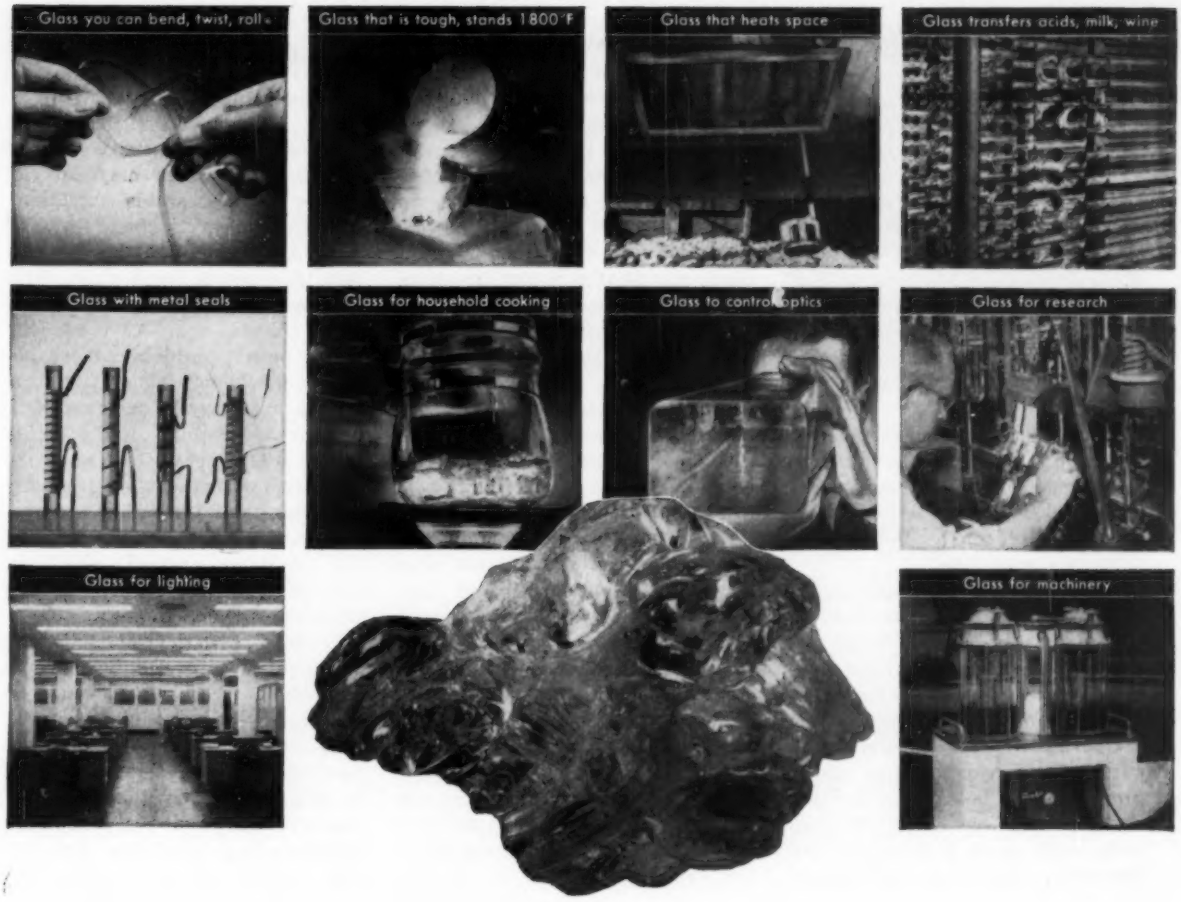
In the long run, there is no certain solution to South Africa's problems. The present government has dedicated itself to ensuring white supremacy. As of now, no political party with any real strength challenges the Nationalists or offers an alternative.

No one knows what the Africans will do. They have apparently given up passive resistance to apartheid. But many observers feel that this is only a prelude to a violent upheaval in relationships between whites and non-whites. That could destroy everything the white man has built in three centuries in South Africa and plunge the sub-continent into chaos from which it may not soon recover.



Flags Signal Output Quality

A glance tells you this machine at Westinghouse Electric Corp.'s Appliance Div. plant is producing within quality standards. Circular flag labeled "in control" and painted green tells you. If quality were below par, you would see a red "out-of-control" flag instead. Flags are at opposite ends of a flat piece of wood that is screwed to the back of a quality-control board at each machine. At half-hour intervals, a patrol inspector sample-checks the work, then pivots the wood piece so that the appropriate flag is up. Corrective action is taken almost immediately to bring processing back into control. Whole shop is easily supervised.—Factory, Aug, p104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Printed TV Amplifier Goes Into Production

Another step toward automation in television-receiver production has just been made by the Radio Corp. of America's Tube Division. The division is now making a complete prealigned 40-megacycle i-f amplifier strip by a combination of printed wiring (McG-H Digest, Dec, '52, p34), and dip-soldering techniques (McG-H Digest, Aug, '53, p38).

Unusual design of components makes it possible to anchor as well as connect all i-f. transformers, tubes sockets, capacitors, and resistors simultaneously in one dip-soldering operation.

After conventional etching of the conductor pattern on one side of a plastic sheet, holes are punched for the parts and eyelets, later riveted to serve as terminals for input, output and power leads.

Operators insert preformed, precut loads of resistors and capacitors in 0.04-in. holes, snap the tube sockets into their self-aligning holes with quick thumb pressure. Mounting tabs and lead projections of six printed coils and transformers are then inserted into six sets of rectangular holes punched for this purpose.

The panel is gripped by its side edges with a holding tool, dipped in liquid resin and then in a vat of molten 60-40 solder.

A final wax dip makes the unit ready for final test and prealignment.—Electronics, July, p5

For Mentally Ill Workers

A Du Pont psychiatrist, at a recent American Petroleum Institute meeting, gave some valuable tips on handling emotionally ill workers. Although such workers do not differ basically from normal employees, they cause more injuries, absenteeism, and personnel relations problems.

The cure is to stop "coddling" such workers because the sickest employees seem to be those who have had the most done for them and the least expected of them. Supervisors should keep them at their jobs and, by fair means, see that they do it. The treatment makes the patient settle down.—Pet Proc, June, p890

Cooked Garbage for Hogs Solves Disposal Problem

"Cooking" raw garbage before feeding it to hogs may be the answer to most states objections to disposing of garbage by hog feeding. The U. S. Public Health Service suggests small plant units operated at relatively low pressures.

The boiler could be of the so-called "package" type. The sorting platform may be designed with two or more bins for inedible refuse. Concrete, steel or wood vats, with permanent heating coils installed, should have large charging hatches leading directly off the inclined sorting platform. Trucks would load cooked garbage from below the vats.

Public Health Service is also experimenting with cooking garbage in truck bodies. Steam could be introduced into a special body. A small boiler could supply the necessary steam. One objection to this scheme is the need for constant agitation for acceptable results.—Eng News-Rec, July 16, p62

Ultrasonics Clean Hard-To-Clean, High-Cost Items Quickly

Ultrasonic cleaning (McG-H Digest, June, p53) is now doing a number of unusual jobs. The unit made by General Electric Co. has on its top a reservoir containing a quartz crystal. The solvent is placed in this reservoir, and parts to be cleaned immersed in the solvent. If part is too large to fit into reservoir, a sheet-metal tank (left) can be built so "chimney" on bottom (sealed with a diaphragm) fits into reservoir. Solvent is put into tank, and water into reservoir. Ultrasonic energy then passes from crystal through water and diaphragm to the solvent. Extra-small parts, such as tiny ball bearings, can be cleaned (right) by putting them in glass beaker filled with solvent and placed in the reservoir. Cleaning rate is about 50 per minute.—Am Mach, July 6, p121

Recession: It's Coming

Businessmen are sure there is going to be a recession, starting some time next year. But they believe it will be no more than a return to normal times

BUSINESS FORECASTING, this year, is harder than ever to do. The reason: U. S. business has perhaps touched the peak of a tremendous boom—and the economy is changing so rapidly that the economists' gages just do not work.

How does a businessman get a forecast, then? Largely by ear. He listens to other businessmen, who have been doing some of their own forecasting—also by ear. This way, he gets to feel the general tone of business thinking. When he knows what business thinks, he has a clue to what it will do. And what business does, determines in a large measure what happens to the economy.

To find out how they were thinking, *Business Week* reporters asked a lot of businessmen: Will there be a recession soon? If so, when? And how bad will it be?

Business gave a plain answer. Yes, there will be a recession. You can look for it to start before mid-1954.

Few companies expect to be hurt by it. The recession, most businessmen believe, will not be a deep one. It will mean nothing more than an end of the boom. The experienced company will weather it without much trouble.

A Buffalo, N. Y., executive expressed this feeling. "Business in 1954," he said, "will just get a little closer to normal."

What he means is that business is not going to get bad; it is just going to get less good.

The 1954 dip will mean that both management and labor, and especially salesmen, will have to work harder for their money—harder than they have worked since 1940, but no harder than they worked before then.

A Memphis, Tenn., executive takes a slightly gloomier view of the situation than most. Says he: "Knowing **how** to work has become a lost art. It's a gigantic problem for industry. How can we re-educate a whole generation?"

The one big difference in mood is between large and small companies. Big outfits are confident of their strength; some are going ahead with long-range expansion plans. Small companies, on the other hand, are definitely hedging.

"We are watching costs very closely", says a western department-store executive. "By this I don't mean that we aren't spending money. We are spending more than ever on expansion."

His remark is typical. Big companies are working every angle they can. They are keeping close watch on inventory ("If the goods does not move, we give it away"). They are building up sales forces ("The lazy people will have to go; the rest will work harder"). They are searching feverishly for new, fast-selling lines of merchandise ("Our research department is growing like a family of rabbits").

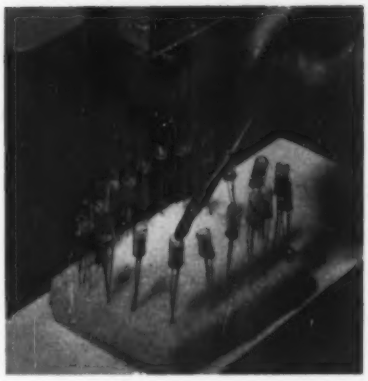
What most businessmen say is that the recession will probably not develop into a downright depression—at least not for many years. There are several reasons for this hopeful thinking:

First is a feeling of confidence in the present administration. They figure if an economic crisis seems near, the government knows what to do.

Second is the general opinion that defense spending will stay fairly high—even though there is no more shooting war.

Third is the feeling that when business starts tightening its belt, it will find there is actually more slack than it had thought.

"We have been loafing too long," concludes a steel-company executive. "We will have to work ten times as hard next year. But we will find we can do it. Matter of fact, I am kind of looking forward to it."—Business Wk, Aug 15, p29



Transistors Get Potted

Ordinary medicinal gelatin capsule makes a good case for transistors at Tung Sol Corp.'s Bloomfield, N. J., plant. Sealed tops of capsules are cut off with heated razor blade, slipped over transistors, stuck in foamed polyethylene blocks, and filled with potting resin with an eyedropper. Potting resin is Araldite warmed to about 120°C. Resin is later cured for 24 hr. in 110°C. oven.—Electronics, Aug, p274

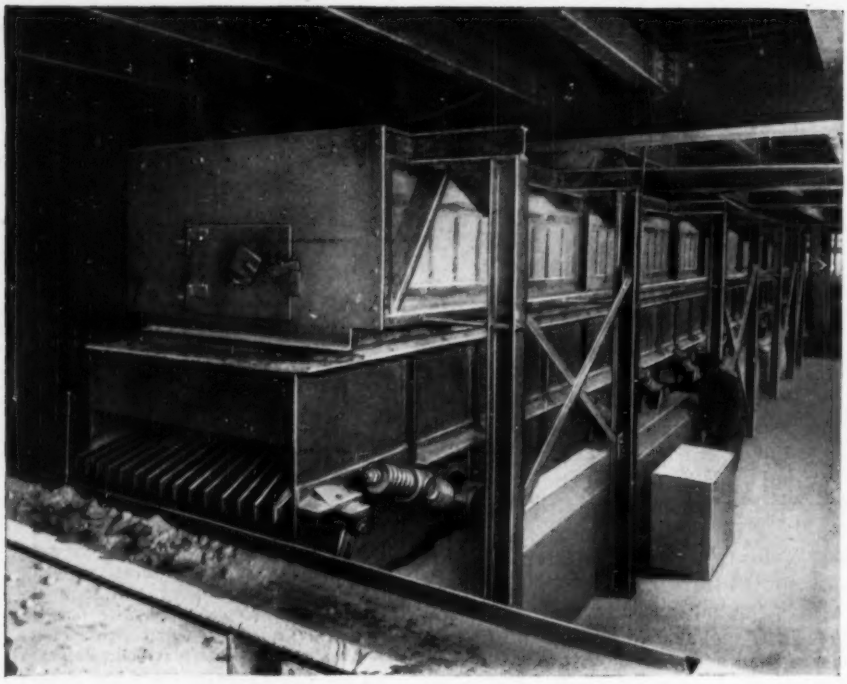
New Aniline Leathers Top Fashions for 1953

Aniline leathers represent the dramatic new leather story of 1953. Full aniline, with better tannage, is a recent innovation.

Aniline leather is drum dyed, chrome or combination tanned leather treated with new seasonings. Pigment dyes are opaque and form a color surface on the leather, while aniline is transparent and is absorbed into the top grain. The characteristic of aniline leather is this transparent color. It seems to give almost a third dimension to a smooth surface.

So far in 1953, the new leathers are first in promotion news and first in fashion importance, in men's and women's shoes and in fine handbags. People are apparently willing to pay higher prices for these shoes and bags.

Volume of aniline shoes and handbags for women has been on a limited, pilot-testing level, but sales results have been spectacular enough to accelerate the sponsorship of anilines in all important shoe lines.—Boot & Shoe Rec, June 15, p51



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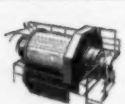
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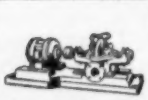
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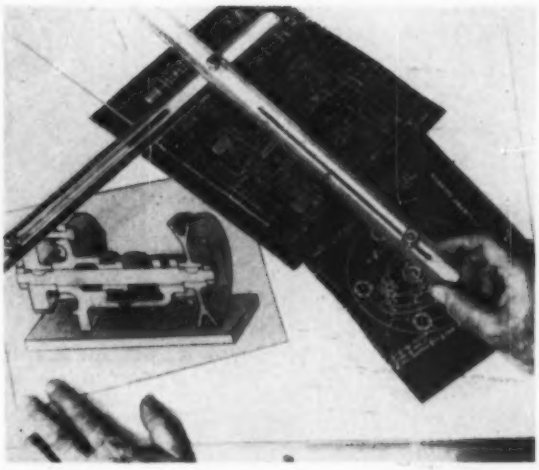
This Month's How To . . .

. . . make sketches that look good



New-type drafting machine makes pictorial drawings simply by tracing conventional orthographic views of the objects. Sketches are isometric, dimetric, or trimetric, depending on arm adjustment.

The two arms—tracing and marking links—are attached to, and slide freely in, a channel track mounted vertically on the table. A tracing, on which orthographic views are mounted, slides horizontally on a straightedge along the bottom. As the tracer, in conjunction with a scanner (triangle) over the upper view, passes over lines in the lower view, the marker draws the sketch.

The machine, called the Adapto-Arm, is made by Wilkinson Co., Box 638, Arnold, Md.—Prod Eng, Aug, p218

. . . keep good public relations

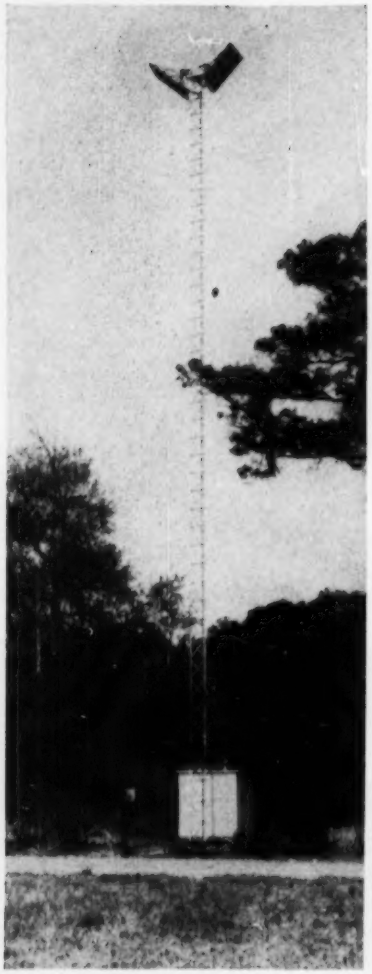
Reaching the public when it is young and making it like you is the best business insurance anyone can buy. That is why the Albuquerque Express Co., Phoenix, Ariz., recently started showing its new trucks to school children.

This one outside a Phoenix school is being looked over by 7th- and 8th-grade children. A public-address system is telling them details about the truck and will be followed by a movie inside the school. Besides making good friends for the future, the truck company exacts respect from boys and girls who might at some time be tempted to deface or damage the vehicle.—Fleet Owner, Aug, p97

. . . be ready for mine emergencies

Emergencies affecting safety and complications involving production happen in the best of mines. Simple tools immediately available to a man who knows what to do with them may mean the difference between a disaster and an incident. A simple tool at the right time may save an impending breakdown or minimize a threatened delay.

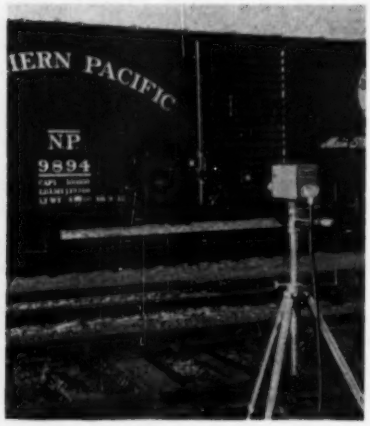
Section foreman of Consolidation Coal Co. is shown here with standard equipment, consisting of a flame safety lamp, combination roof tool and cane, and a leather pocket containing screw driver, pliers, and adjustable wrench. In his pockets, he also carries a simple weight with strings for sighting places, a 50-ft. tape, chalk, and a folded booklet of mining plan for his section.—Coal Age, Aug, p111



MICROWAVE tower, part of radio relay, gives new look to signal line.

RADIO in switch engine allows engineer to talk through ground-level . . .

RECEIVER-transmitter units spotted around the yard. Pedal works unit.



TELEVISION camera reads car numbers. Further along the track . . .

ELECTRONIC scale weighs the car, sends information to yard office.

Now—Pushbutton Railroads

Electronics is speeding many of the tedious details of rail freight handling and, proving itself dependable, it is working into passenger travel too

ELECTRON TUBES are not new to the U. S. railroad industry. Since 1922 when 4 pliotrons were used in a system to tell engineers conditions on the road ahead, electron tubes have been cleaving a way for themselves. It has been slow going because the railroads have been reluctant to rely on electron tubes, choosing fail-safe electro-mechanical devices instead for high-speed trains.

It is in the freight-car classification and forwarding yards that electronic equipment is making its biggest inroad with industrial television, radar, microwave, automatic weighers, and two-way radio.

Most of the electron tubes in use are in communications equipment and over 12,000 transmitters are now authorized by the Federal Communications Commission. Bell-system telephones aboard crack trains allow passengers to make and receive telephone calls while enroute. Here, two services are used: the highway mobile telephone service at 30 to 44 megacycles and urban mobile service at 152 to 162 megacycles.

With their great fleet of harbor and coastal vessels, the railroads are also large users of marine radio telephone equipment. The New York Central railway is plan-

ning installation of low-frequency, automatic-direction-finding equipment on its Hudson River ferry in New York. The system will consist of a receiver aboard ship and a low-power beacon located on the ferry slip to guide the ferry in poor weather.

Maintaining communications along right-of-way is a major function of railroad communications engineers. Carrier-telephone equipment finds use throughout their extensive wire-line plant.

Microwave radio-relay systems have been installed by the Rock Island and the Santa Fe railroads. Santa Fe operates on 6,575 to 6,875 megacycles, and all stations have standby radio-frequency equipment in case of failure. The Rock Island system spans 106 miles between Norton and Goodland, Kansas. It operates in the 6,575- to 6,875-megacycle band and has two terminals and four repeaters.

In 1949 the Long Island Railroad, serving Long Island, New York, experimented with microwave for remote operation of power-distributing substations, switches, signals, metering electric power, telephone, telegraph, and facsimile communications. The Long Island reported good results with all.

Both magnetic amplifiers and transistors are finding application in railroad work. Magnetic-amplifier regulators have been used with axle-driven generators to supply power for radio equipment in freight-train cabooses.

A transistor amplifier in Baltimore and Ohio Railroad telephone subsets help overcome attenuation on heavily-loaded train-dispatching circuits. The transistor is a junction type with base input. The amplifier operates from the 4½-volt local battery that supplies current to the carbon microphone. The transistor amplifier is normally connected in the receive position and is controlled by a push-to-talk button.

About 15 transistor-amplifier subsets are presently in use. Three were built by B & O personnel. The subset has been recently redesigned for mass production.

In the freight yard, industrial television cameras are saving time and manpower by reading car numbers and sending them to a clerk in the yard office.

After the cars roll past the television camera, they are uncoupled and weighed on an electronic scale; the car's net weight is recorded for the weighmaster by an electric printer. Remote switches are then operated and the car rolls on down a grade into classification tracks.

A radar speed meter clocks the car as it rolls down hill. If it is going too fast for safe coupling, the operator can push a button, engage a retarder on the rails, and slow the car to the desired speed with complete control.

Freight-yard communications are vital for safe and efficient operation. Southern Railway uses 40 paging and 150 talkback loudspeakers to coordinate operations in their Norris yard. Two hundred ground-line loudspeakers are also installed. To operate one of these as a microphone, the talker presses a pedal.

Twenty-two uhf. receivers and 21 transmitters also help knit yard operations together. The equipment is fail-safe because a 1,200-cycles-per-sec. beep tone is transmitted regularly for ½ sec. at 10-sec. intervals so the engineer knows his receiver is working properly.

A train-position indicator introduced some years ago on the Rock Island uses signals having frequencies identified with fixed points along the line. When keyed by the train, these signals are passed over wayside wires, through electronic equipment back to a recorder to show the train's progress.

Track inspection is also being done by electronics equipment aboard a small rail car traveling 12 miles per hr. The equipment passes a heavy current, 8,000 amp. at 1.8 volts, through the rails, recording local variations in a magnetic field caused by invisible fissures.

To maintain many thousands of miles of pole line, the Southern Pacific Railroad and the Chesapeake & Ohio use a radar-like device. The device transmits a pulsed, low-frequency signal that is reflected by the mismatch caused by a line fault.—Electronics, Aug, p130

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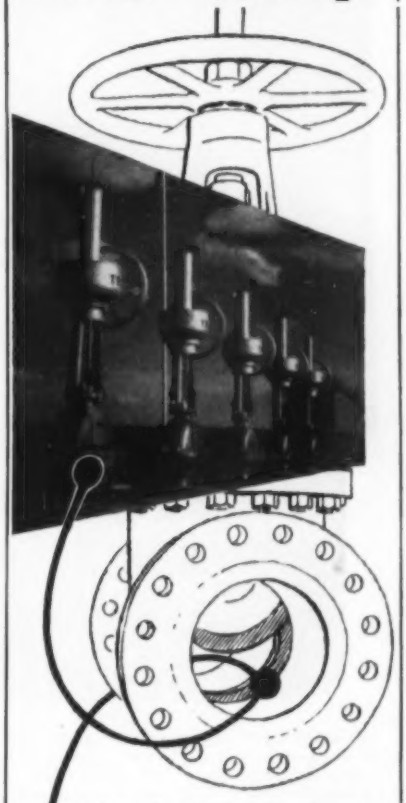

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53-21

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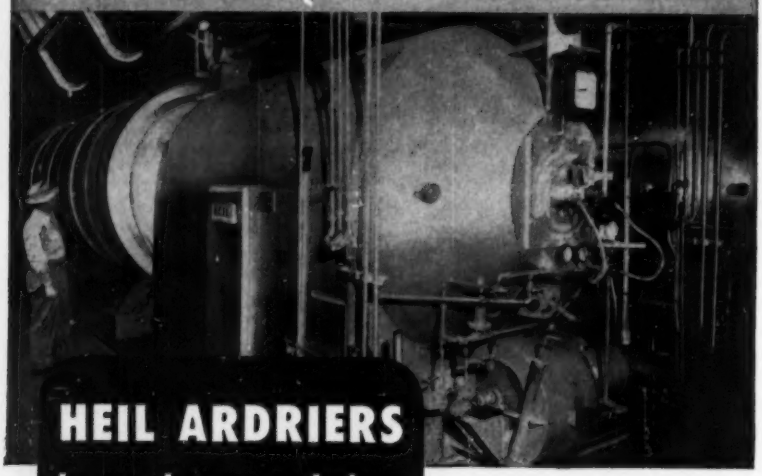
Cost? Product Quality? Space Limitations? Vitamin Loss? Uniform Color and Dryness? Fuel Consumption? Installation?



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EARD-2

Capital Goods Up

U. S. sales of machinery abroad have tripled since 1938. Latin America replaces Europe

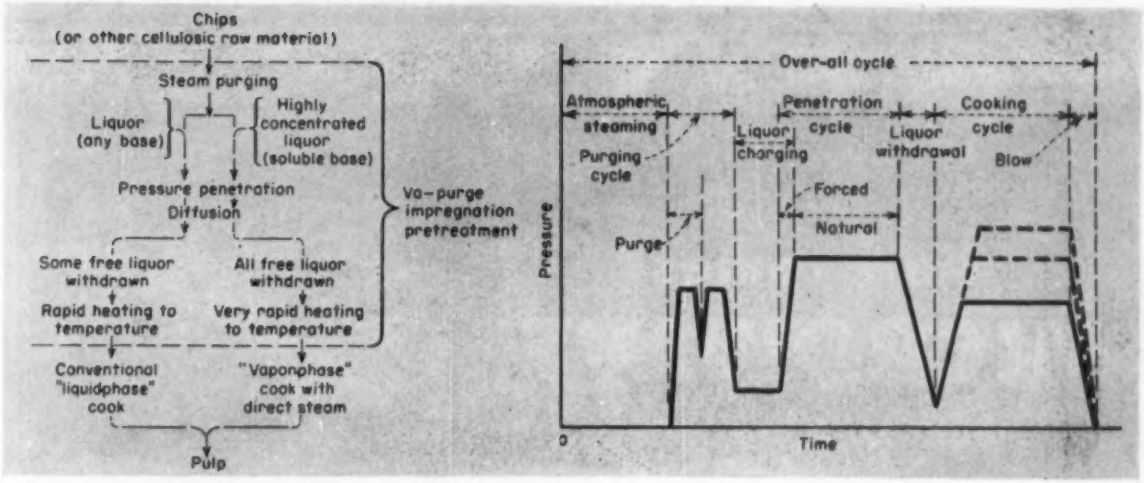
THE BIGGEST U. S. EXPORT—capital goods—more than tripled its volume of overseas sales between 1938 and 1952. In the same period, there has been a pretty radical change in the destinations of those capital goods. Latin America has taken over Europe's prewar role as the top buyer; Canada, with the biggest increase of all, holds second place and is moving up fast on Latin America.

These are the main facts to come out of a survey by the Council for Technological Advancement, a research group connected with Chicago's Machinery and Allied Products Institute.

All areas have increased their buying of U. S. machinery and equipment since 1938. But there has been a big difference in the rates of increase. Latin American purchases increased from about $213-million in 1938 to $960-million in 1952—a gain of about 350%. Canadian purchases are up more than 500% to 840-million.

Through 1948, Latin America was the most rapidly expanding market for U. S. machinery and equipment. But that is now changed. Exchange shortages have forced many countries in the area to limit their purchases from the U. S. As a result, during the past 4 years the physical volume of U. S. capital-goods sales to Latin America has dropped 15%.

Meanwhile, Canada is in the midst of a boom. It needs U. S. machinery, especially mining and agricultural, and it has little trouble paying for it. One reason: the export prices of Canadian raw materials have risen more rapidly than the prices of U. S. capital goods. Because of its need and the ability to pay, Canada has more than doubled its purchases of U. S. mining, construction and agricultural machinery in the past 4 years. It should take over Latin America's best-customer role any day now.—Business Wk, July 25, p156



Va-Purge Improves Pulping

In chemical wood pulping, the cooking liquor must penetrate wood chips thoroughly. The new Va-Purge process makes sure that penetration is complete

ONE OF THE CENTURY'S major advances in wood-pulping methods was disclosed at the summer meeting of the Canadian Pulp & Paper Association. It is the Va-Purge process, which insures uniform, thorough penetration of cooking liquor into the wood.

The process, developed in 1948 at the Pulp & Paper Research Institute of Canada and patented in the U. S. in 1953, offers these further benefits:

1. Improved pulp quality.
2. Increased pulp yields.
3. Reduced cooking time.
4. Lower consumption of steam and chemicals.
5. Ability to cook mixtures of wood species with little regard to variations in moisture content.

Dry wood contains from 50 to 75% air space. It is this entrained air that resists penetration of the cooking liquor. So the Va-Purge process was developed on the theory that replacement of the air by a soluble gas or vapor prior to liquid impregnation would result in more rapid penetration.

Purging with steam is carried out in a pressure vessel. Pressure builds up rapidly, then falls to a predetermined level. The purging cycle may consist of any number of separate purges, each one removing some of the air from the vessel and chips. Presteaming at atmospheric pressure, while not necessary, also removes air and heats the charge.

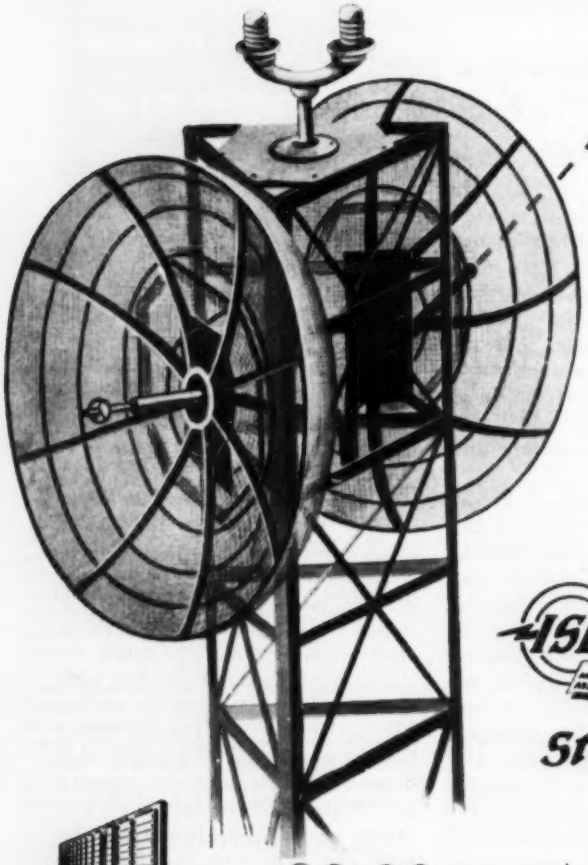
After purging, liquor of the desired composition is run into the digester. No air is permitted to enter during this step, which may require carrying out the transfer under pressure. When the digester is filled or at least enough liquor is added to submerge the chips, pressure is built up and maintained until the chemical from the liquor penetrates and diffuses into the chips. The length of the natural penetration step depends on the efficiency desired. At 80°C., considerable penetration takes place in 10 min.

After penetration, the chips are ready for cooking. The value of the Va-Purge treatment is shown during cooking. For example, in calcium bisulfite digestions, bringing the charge to normal maximum cooking temperature quickly causes "burning" unless the chips are thoroughly penetrated. Va-Purge eliminates this burning.

Another test is the ability to use the "vapor-phase" technique. The purged wood is penetrated with a liquor of high enough chemical concentration that the wood will be completely pulped at an appropriate temperature. The liquor is withdrawn and the pulping carried out by surrounding the chips with steam under pressure.

This technique has long been known in the laboratory but never thought practical on a mill scale. Within the past year, vapor-phase cooks have been made in mill digesters at Bathurst Power & Paper Co., Ltd., and Price Brothers & Co., Ltd., in Canada.

The Va-Purge process has also been used successfully in sulfite pulping trials at Pacific News Ltd., Canada, and with single mill digesters in (a) soda pulping at Champion-International Co., Mass., and (b) kraft pulping by KVP Co., Ltd., Canada. Hinde & Dauch Paper Co. of Canada Ltd. has applied Va-Purge in straw-pulping for corrugated-board manufacturing.—Paper Ind, July, p450



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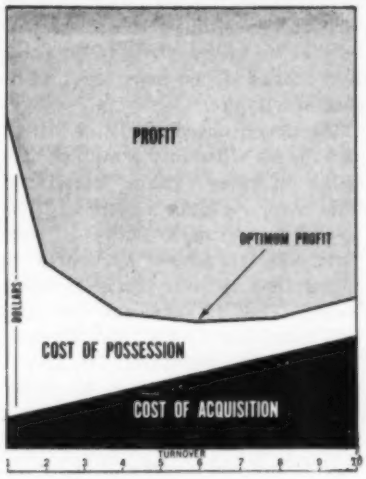
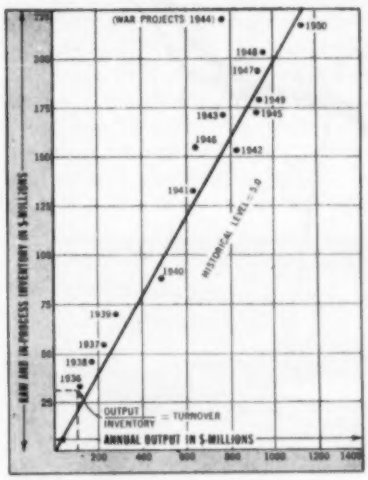
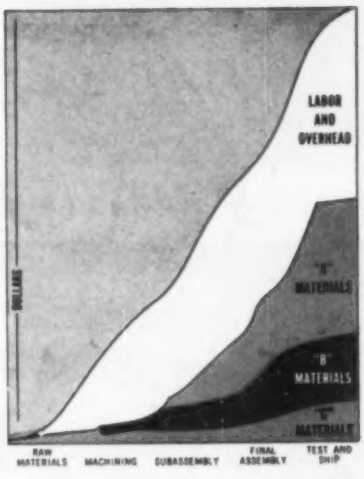
Right Inventory Budget May Be Determined in Either of Two Ways



1. IDEAL TURNOVER RATE for company in this example is six—meaning value of annual output should be six times the average inventory value.

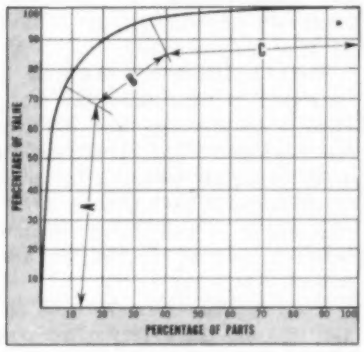


2. HISTORICAL METHOD sets budget at average for years past. Method is simple and gives you a yardstick to match present and future with past.

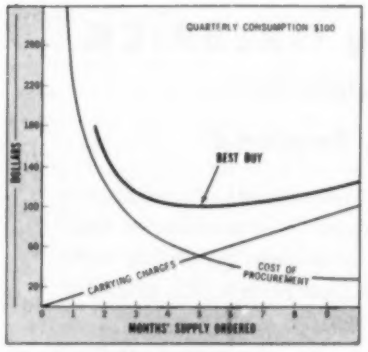


3. THEORETICAL METHOD is more complex, but necessary under certain conditions. To calculate, plot inventory and output build-up against time.

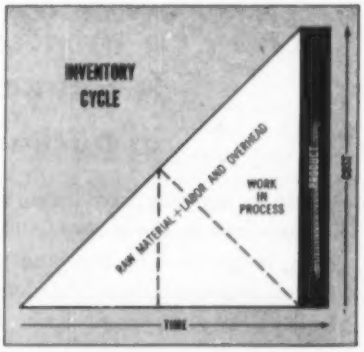
Analyze Inventory to Order Right Amount and Cut Work in Process



4. ABC ANALYSIS shows up the inventory spots where concentrated control will do the most good. "A", "B", and "C" denote different types.



5. OPTIMUM QUANTITY to order at one time is shown by lowest sum of procurement and carrying costs. Construct family of "best-buy" curves.



6. INVENTORY CYCLE is the time from receipt of the first raw material to shipment of product. Small time cut near end of cycle is important.

Better Inventory Management

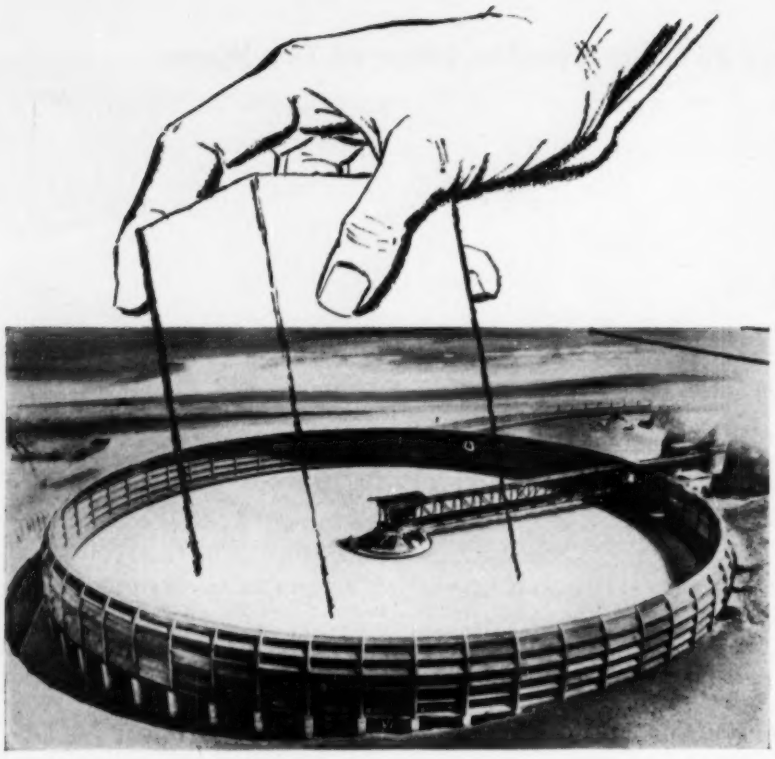
One way of getting around a squeeze on profits is through better inventory management. It's really not hard to accomplish and it pays quick dividends

IT'S GOOD MANAGEMENT to cut inventories and maintain a satisfactory return on your investment. The six steps toward better inventory management discussed here serve as a guide for a review of current inventory practice.

1. Recognizing the Need for Control—Maintaining correct inventory needs conscientious, enlightened management. Key questions management should ask are:

- Is our inventory control really effective?
- Are turnover budgets calculated—or simply guessed at?
- How penetrating is our analysis of most-economical order quantities?

A large part of any business investment is in inventory. So



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controlling inventory controls percent return on investment. But controlling inventory is not simple. Inventory is seriously affected by purchases, but these purchases cannot be based directly on sales and stocks if you experience periods of change.

An accentuated rise and fall of purchases with only a mild fluctuation in sales can be illustrated this way. Assume a company has —and is trying to maintain—the optimum turnover by carrying stock that is four times monthly sales. Now, if sales are normally 100 units per month, then the optimum stock is 400 units. The month that sales drop 10% to 90 units, total stock should drop 10% to 360. Purchases should cover 90 units for replacement of sales, less 40 units for the decrease in stock, or a net total of 50 units. So purchases would decrease 50% at a time when sales drop only 10%.

2. Determining Optimum Turnover—The unit of inventory budget measurement is inventory turnover—annual output divided by average inventory.

Some fundamental research is required to determine the optimum turnover for your particular business. Fig. 1 shows an actual analysis where a turnover of six times is the company objective. It is a calculated balance between cost of acquisition and cost of possession.

Two methods form a basis for setting an inventory turnover budget: historical and theoretical.

Historical method is plotted in Fig. 2. Cost is plotted against average inventory for each year. Their ratio, or the slope of a median line, gives an average historical turnover. In the illustration, five is the turnover ratio.

The theoretical method is useful when products change, when past performance has been erratic, when you need a good, thorough analysis of your whole inventory situation. Here is the way it is done.

Build up each of the major classes of material, labor, and overhead costs graphically (Fig. 3) from the arrival of the first piece of raw material until product shipment.

Statistically lay out your ma-

terial and labor cycles by units of time, and calculate your turnover. Then you may have to project this theoretical calculation to an actual basis.

3. Analyzing the Inventory Problem—An effective tool for analyzing the inventory problem is *ABC* analysis. It breaks down inventory items into three classes:

- *A* items are those few major ones that tie up most of the inventory investment.
- *B* items are those of secondary importance.
- *C* items are the numerous but inexpensive ones that make up a minor part of the inventory investment.

Fig. 4 is an actual, typical *ABC* inventory curve showing that 75% of the cost in this particular case is made up of *A* items, comprising in number only 8% of all items. The middle 25% are called *B* items and are equal to 20% of cost. The *C* items amount to 67% of the total items, but only 5% of the total cost.

The ABC plan works this way. *A* items are ordered, scheduled, and rescheduled for receipt on weekly, daily, or even hourly basis.

On the other extreme, the numerous but inexpensive *C* items must be handled economically because they probably add up to 75% of the number of items or records handled. Since a large and safe protective stock can be carried quite economically, detailed analysis of order quantities and schedules can be dropped.

4. Ordering the Right Quantity—Economical ordering is a critical step. Turnover is closely correlated with effective ordering. The major influencing factors in selecting order quantities accurately are:

- How much it costs to carry a unit value of inventory for a year.
- Cost of procurement.
- Cost of the item being ordered and quantity price discounts.
- Potential obsolescence and deterioration.

The important cost of procurement is not the cost of placing one order, but rather the difference in cost between obtaining a given amount in one order or in two orders. You should balance "cost of procurement" against "carrying costs." Depending on the cost of the item and its usage rate, you can readily determine the best buy.

Fig. 5 shows the graphic calculation of an order quantity for an item of which the quarterly usage is only $100. It suggests that a 5-month supply be ordered. Now this is only true where the carrying charge is 5% per month and cost of acquisition is $20.

A set of curves (Fig. 6) may now be plotted for a variety of usages, under a calculated set of conditions, to indicate the best order quantity for a wide range of consumption rates. This calculation recommends only the number of months' supply to be ordered. Next, price discounts for larger quantities must be evaluated for each order to see if the savings obtained by purchasing a larger quantity are greater than the carrying costs.

5. Minimizing Work in Process—The graphic build-up of inventory for a theoretical product (Fig. 6) shows the relative importance of controlling work-in-process inventory. If the manufacturing cycle is 10 weeks and the raw material is brought in 1 week later than shown, the saving is the area under the curve on the left side of the diagram for one-tenth of the horizontal distance, a relatively small amount.

If final assembly, testing, boxing, and shipping time is reduced by a corresponding week, the savings is the area under the right side of the figure for one-tenth of the horizontal distance. This is obviously a far greater economy. From an inventory controller's point of view: manufacturing cycle efficiency is equal to processing time divided by total elapsed time.

6. Educating Everyone Involved—One company found that if it emphasized a broad, thorough inventory-control selling and educating program, it was successful in getting across the idea of inventory control. The company helps its inventory supervisors make their educational and selling efforts more effective. Inventory management manuals and books are written to give a large number of employees a complete and clear idea of the inventory function.—Factory, Aug, p96

CURVING and coiling to almost any diameter, are two out of many operations which can be performed in a Yoder roll forming machine. As fast as formed, the sections can be continuously coiled and cut to length to make rings for auto hub caps, headlights, wheel trim, stator rings, etc., at a huge saving in cost of materials and labor.

Among other operations which can be tied in with cold roll forming may be mentioned embossing, notching, perforating, welding, flattening, lock-seaming, filling and closing tubular shapes, wrapping, edge trimming, etc.

In the design and assembly of production lines of this character, the know-how of the Yoder engineering staff is at your service. The Yoder book on Cold Roll Forming deals broadly with the most important phases of the subject. Ask for it.

THE YODER COMPANY
5517 Walworth Ave., Cleveland 2, Ohio

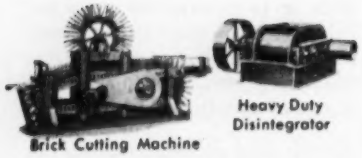
Cold-Roll FORMING MACHINES

Sugar Cane Cars Loading 2 to 40 tons capacity.

Woolery Inspection and Gang Cars

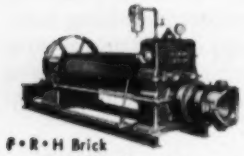
Woolery Weed Burners

Heavy Duty Trailers for every requirement



Brick Cutting Machine

Heavy Duty Disintegrator



P•R•H Brick and Tile Machines

Heavy Duty Crusher

A Sure Way TO GET COST- FOR TODAY'S INCREASED

Use equipment designed and made with the answer to YOUR problems and YOUR objectives—BUILT RIGHT IN!

HOW IS THAT DONE?

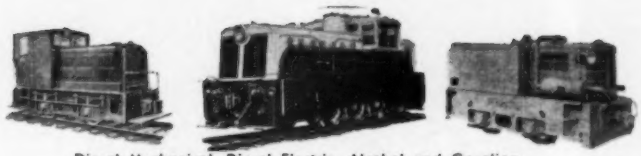
By close consultation with you, a thorough understanding of your specific needs . . . a knowledge gained in more than 50 years of producing equipment that has had to perform many jobs—in many ways—under varying conditions throughout the world.

WHAT "EXTRA FACTOR" IS ADDED?

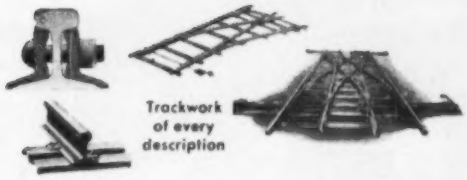
American industry has had a history of constant improvement in manufacturing techniques; the discovery of new methods and applications. The daily task of our extensive Engineering and Research Department facilities is to make certain YOUR requirements are met with the latest known technological advances to make Pressed Steel Car Company equipment economically more productive . . . *over a longer working life.*

PSC

PRESSED STEEL CAR



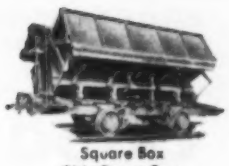
Diesel Mechanical, Diesel Electric, Alcohol and Gasoline Locomotives from 3 to 70 tons.



Trackwork of every description

CUTTING, TOP PERFORMANCE PRODUCTION DEMANDS!

Granby-type Dump Cars



Square Box Side Dump Cars

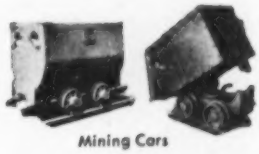
WHO USES OUR PRODUCTS...AND WHY?

All over the world, Pressed Steel Car Company products are to be found in coal and ore mines, quarries, steel and metal working plants, brick and tile factories, sugar and sisal plantations, railroads, the transportation, construction and chemical industries. Why? They are well pleased with the equipment recommended as the solution to THEIR problem—satisfied with the efficiency, durability and performance of Pressed Steel Car products.

Send coupon below to find out how Pressed Steel Car Company can serve your needs.

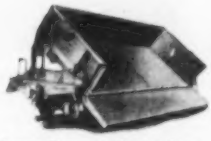
Cradle Dump Cars

Tray-type double Side Dump Cars



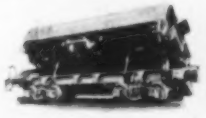
Mining Cars

Pressed Steel Car Company offers a wide line of industrial cars and equipment



Large Capacity Dump Cars

IMPROVED PERFORMANCE AND EFFICIENCY—the right answer to your problem—can be found in Pressed Steel Car Company equipment.



Pressed Steel Car Company offers complete facilities for the study of YOUR particular problem. Attach a brief outline of your requirements to the coupon provided and forward both to the address indicated. There is no obligation.

Steelcar

PRESSED STEEL CAR COMPANY, INC., DEPT. MG
25 Broad St., New York 4, N. Y., U.S.A.

Please send me information on the following products:

- ☐ Agricultural Railway cars
- ☐ Industrial Railway cars
- ☐ Car parts
- ☐ Trackwork
- ☐ Locomotives
- ☐ Industrial trailers
- ☐ Brick & Tile machinery
- ☐ Other equipment

*Name*_____ *Title*_____

*Company*_____

*Address*_____

*City*_____ *Country*_____

COMPANY, INC.

Export Division, 25 Broad St., New York 4, N. Y.

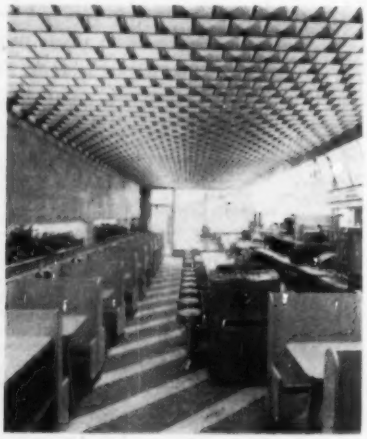
BANK restyled lighting by installing six 40-w. fluorescent lamps from ceiling. Light at teller's cage is 45 ft.-c.

RUG STORE made merchandise appear as it would in the home by using 300-w. ceiling lights and 150-w. spotlights.

Good Lighting, Good Business

FURNITURE STORE put in an open-top canopy, 4 ft. wide, 8 ft. above the floor. Inside are 150-w. floodlights, fluorescents, and 150-w. spotlights.

JEWELRY glitters under louvered floodlights and fluorescents in ceiling.



RESTAURANT with redwood ceiling is lighted by 40-w. fluorescent lights.

THE BUSINESSES on this page are not of the impulse-buying type. The rug store, the furniture store, the jewelry shop are places where customers give critical thought to high-priced purchases and adequate light is essential to put the customer in a buying frame of mind.

The bank that sells service instead of commodities restyled its lighting to make itself more inviting to its customers. Because a bank must be dignified and yet make people feel that it is up to date, lighting is one of the most important factors in good customer relationship.

The restaurant depends on repeat sales for its income, much the same as the bank depends on the frequent trips of its depositors to keep its assets high. But, of course, the similarity ends there. Appearance is a much bigger factor in restaurant sales and therefore lighting can mean success or failure in the restaurant business.

Installations in these stores have all been used for some time and have proven their sales appeal. They are all essentially functional and follow a noticeable trend in the U.S. to combine fluorescent and incandescent lamps to give soft diffused light over large areas and spot intensity for highlights, as on the rugs in the rug store.—Elec. World, Aug, p99.

New Shaking Conveyor Boosts Mine Efficiency

No. 14 Coal Co., Pa., cuts power requirements and materials-handling labor with a new aluminum shaking conveyor manufactured by the Frontier Bronze Co. The conveyor, powered by a 10-hp. Goodman Mfg. Co. drive unit, includes a cross-conveyor, a gathering conveyor, and one or more chamber conveyors, all operating 4from the single drive unit.

Shaking force is transmitted through carrier frames made of aluminum-alloy I-beams; the trough sections merely ride in the carrier frames and are not subjected to the shaking force. The carrier frames in their back-and-forth motion ride on roller bearings set into the tops of supporting frames, also made of aluminum aloy.

At No. 14, each conveyor crew consists of three men, two at the face and one at the loading point. They work together in getting the carrier frames into position during lapses in the regular face cycle.

Troughs and supporting stands can be handled by one man. In disassembling the conveyor prior to moving to a new setup, the parts are removed from the inby end of the conveyor and moved toward the drive unit by action of the conveyor itself.—Coal Age, July, p78

Cellular Electronics

To connect electronic components and tubes to printed-circuit sheets, the U.S. National Bureau of Standards breaks the basic units of the circuit into cells and building blocks. Spring pressure makes the contact.

Small three-contact molded blocks contain one or two circuit elements, such as resistors, capacitors, inductors. Cells are grouped into building blocks; each block has two tubes and 12 cells held together by a rigid frame. The top of the block has a spring assembly containing tube sockets. The block is screwed to the printed baseplate. Cells slide between tube socket and baseplate.

Advantages: Any number of two-tube blocks can be fastened on the printed baseplate. Cells are inexpensive, compact, and easy to handle and store. Cellular construction permits quick replacement of components.—Prod Eng, Aug, p211

Faster Dry Machining

Using coolants on some high-speed turning jobs with carbide may be keeping the production rate lower than it should be. This was the case on turning railroad bearing races made of SAE 4320 steel at TCM Mfg. Co.

Output was not too bad—seven units per hr., but tool-tip breakage was annoying. As many as three tips broke each day.

As the cut was uneven and the tip ran red hot, it was thought that the intermittent cooling could be causing thermal shock and resulting cracks. So dry cutting was adopted and tool breakage dropped to zero.

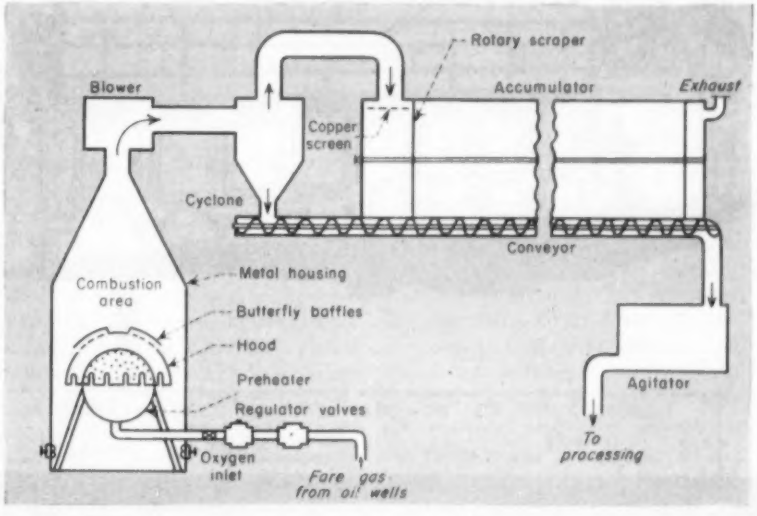
Dry cutting reduced the power drain by 15% and boosted production to 13 units per hr.—Am Mach, July 20, p129

Air-Placed Concrete Eliminates Mortar Joints

Air-placed concrete, combined with dry-block construction, recently was tried in the construction of a two-story building by Air Placement Equipment Co. Speed and ease of erection, coupled with the sound structure achieved, indicate that many buildings can be built with this method at substantial savings in materials and labor.

Lightweight dry concrete blocks were stacked on a level foundation to standard window height. Then a facing coat of concrete was shot against the interior surface of the wall. Tests showed that the coating added sufficient strength to the dry wall to make possible laying up of the remainder of the wall in the same manner.

Next, standard 17-gage Key Mesh was anchored to the exterior side of the wall about ¾ in. away from the wall. Mesh served as a guide for the exterior coat. Air Placement engineers feel that mortar joints are unnecessary where first-class blocks are used. —Const Meth & Equip, Aug, p54



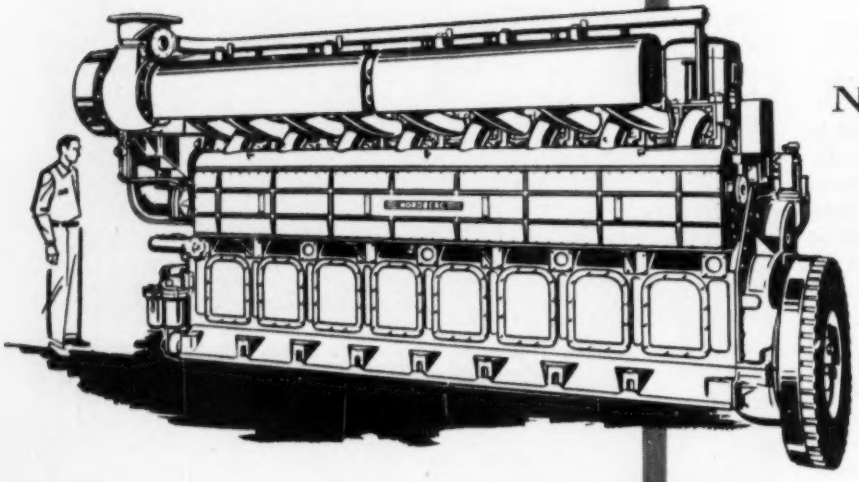
Revolutionary Carbon-Black Process

New process to make carbon black is designed for use in small, inexpensive plants. It can use flare gas from oil wells instead of natural gas. Other advantages: high yields, little air pollution. Developed by Lynn Carbon Black Co., the process preheats flare gas in a spherical steel or cast-iron vessel. Careful regulation of air intake controls preheating and prevents excessive temperatures. Combustion and formation of carbon black take place in metal housing over the preheater. Carbon black is blown to cyclone separator and passes to accumulator.—Chem Eng, July, p120

Depend on NORDBERG... for the BEST in Modern Diesel Power!

COMPARE THESE ADVANTAGES:

- ***BUILT-IN DEPENDABILITY*** . . . Heavy duty construction unmatched for long life and trouble-free operation.
- ***UNEQUALLED EXPERIENCE*** . . . Heavy machinery builders since 1890, Nordberg produces America's largest line of heavy duty Diesels.
- ***ECONOMICAL AT ALL LOADS*** . . . Controlled fuel injection assures maximum fuel economy.
- ***CONTROLLED POWER*** . . . Instantaneous response to changing load conditions.
- ***COMPLETE ACCESSIBILITY*** . . . Simplicity of design and construction makes all parts readily accessible.
- ***LOW MAINTENANCE*** . . . Advanced engineering results in less maintenance cost.



NORDBERG Engines for stationary and marine service are built in sizes from 10 to over 10,000 horsepower in a single engine . . . including Diesel, Duafuel® and Spark-Fired Gas Burning types. When you think of *POWER*—think of *NORDBERG. Write for further details, outlining your power requirements.*

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Builders of: DIESEL and GASOLINE ENGINES — CRUSHERS and MACHINERY for Processing Ores and Industrial Minerals — MINE HOISTS — RAILWAY MAINTENANCE MACHINERY

Dealers in Principal Trading Areas Throughout the World

VP263

TECHNICAL SHORTS

Easy Does It—Here's an idea if there is much ladder climbing in your business. Humble Oil & Refining Co. rigs its derricks with counterweights that help derrick men climb to the top of the derrick. The counterweight is attached by a long cable to a safety belt that the derrick man straps on before he starts his climb up the ladder.—Oil & Gas J, July 27, p354

Saves Cheese Spoilage—Yearly loss of cheese, through mold spoilage, running into the millions of pounds, can be slashed with new fungistatic agent—sorbic acid. Agent protects cheese when it is incorporated in wax-coated cellophane wrapper. Sorbic acid migrates from the face of the wrapper into the surface of the cheese.—Food Eng, Aug, p127

No Dummy About Safety

Placidly seated above is Mr. X, a dummy with a tape recorder inside him. Workers at a St. Louis brewery are apt to find him anywhere in the plant, usually where there has been a recent accident. Here, a worker is standing on a mat with a switch beneath. When stepped on, it sets off Mr. X's tape-recorded speech about observing safety rules with a final caution: "Don't let it happen to you!" He usually has an eye, arm, or leg properly bandaged to underscore his talk. Results have been good, the company reports.—Food Eng, July, p70

The Bounce in Rubber—Researchers not long ago proved that ozone in the air, not the sun's rays or temperature changes, caused cracks in rubber and destroyed its bounce. By subjecting samples to controlled ozone concentrations, Witco Chemical Co. is trying to find out why.—Chem Wk, Aug 1, p48

Bores Sewer Tunnel—National Construction Co., Cleveland, Ohio, put a coal-mining machine to work digging a 4,000-ft. sewer tunnel. Ground was medium-hard shale, comparable in digging characteristics to coal. Tunnel was 12 ft. in dia. Digger made about 10 ft. in 8-hr. shift.—Eng News-Rec, July 30, p23

No Bumps for Light Planes—A light-plane shock absorber has been developed by Earl Metzler, Latrobe, Pa. The device fits between the wing struts and fuselage attachment. Also, it can be used to increase dihedral angle to increase lateral stability. It should help amateur pilots fly under blind conditions.—Aviation Wk, July 6, p30

Longer Life for Lamps—Your incandescent lamps will live longer in welding areas if you dip the bulbs in a clear liquid called Glyptal made by General Electric Co. It will dry in a shellac-like finish that resists weld spatter and extends lamp life in welding areas from an 8-min. average to as long as a month. Keep Glyptal away from bulb base to prevent sticking.—Factory, July, p140

Isotopes Overseas—About 40% of Britain's production of isotopes at Harwell during the second quarter of this year were exported. Britain ships to 38 countries and is practically the sole supply to Europe and the Commonwealth. A favorite transportation method is in aircraft wing tips.—Mach, Aug 1, p1953

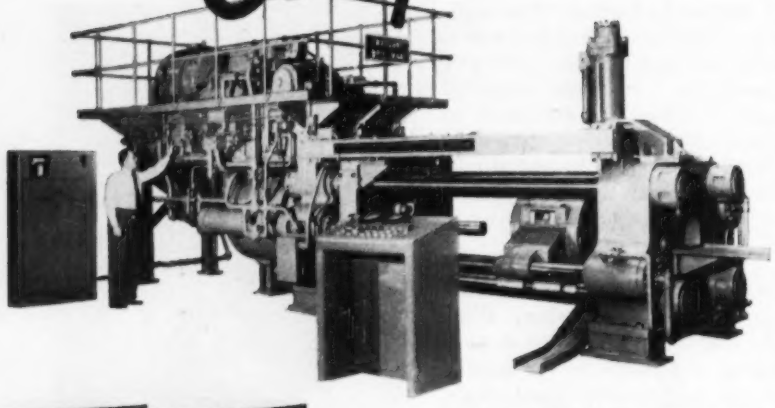
Flameproof Cotton Fabric

Temperatures up to 800°F. can be withstood by persons wearing a cotton coat like this. Coats are treated with Permaproof 300, an insoluble permanent-type flame-proofing agent developed by Treesdale Laboratories. Involved in the finishing procedure are a dip, nip, drying, and in some cases curing. Aluminum-foil interliner reflects a great part of the heat away from the body.—Textile World, Aug, p241

Tubes Run Elevator—Electron tubes have replaced both operator and starter in new Otis Elevator Co. elevators. Timed circuits retire cars during slack period, speed up schedule during rush. Savings up to $7,000 per elevator per year are possible.—Electronics, Aug, p16

Sawgrass Paper—Experimental work done by Hertz Foundation Laboratory in Savannah, Ga., indicates that newsprint made from sawgrass is equal to that made from many other raw materials. A plant will be built at Belle Glade, Florida, to use the Everglades sawgrass.—Paper Ind, May, p201, June, p319

WE INVITE Comparison



Watson-Stillman 1250 Ton Aluminum Extrusion Press.

Send for Extrusion Bulletin 340-A

W-S HYDRAULIC

ESTABLISHED 1848

If we suggest that you consult Watson-Stillman *first* on additional extrusion capacity, it's not with any thought of avoiding comparison.

In fact, here's an extrusion press *so* outstanding—in features, performance, and production—that we urge you to stop, look and listen to all other offers.

Only in this way can you fully appreciate the overwhelming superiority of this Watson-Stillman 1250 ton aluminum extruder over anything else in its class.

Seeing is believing. Don't decide on paper, or on the basis of reports one time or more removed from the source. Drop us a line and we'll arrange for you to visit one of the many leading plants equipped with Watson-Stillman presses.

Watch them at work. Talk to the men whose production and profits depend on Watson-Stillman Presses. You will understand why *Watson-Stillman Extruders Lead the Field.*

EXPORT DEPARTMENT

THE WATSON-STILLMAN COMPANY

DIVISION OF H. K. PORTER COMPANY, INC.

ROSELLE, NEW JERSEY

9-0-78

Industry Preference Is For Watson-Stillman . . . The Finest Extrusion Presses In The Field.

H-F Fluorescents for Tough Lighting Problems

If you are troubled with heat from incandescent lights in your processing, try high-frequency fluorescent lights. They will work even better than the regular-frequency flourescents because they have no ballasts to give off heat.

Most used frequency is about 400 cycles. You can get the high frequency from either a rotary converter or a magnetic frequency converter. Some cost-saving advantages you are likely to get are:

- Lighter-weight fixtures—15 to 20 lb. per fixture less.
- Smaller ballasts or capacitors.
- Less heat from lighting. Ballasts for 60-cycle fixtures lose 32 to 40 watts. High frequency capacitors lose little heat.
- Better lamp output. You may get 40% more light from the same tubes.—Factory, Aug, p82

New Ideas in Enameling

Conveyor Change . . .

. . . at Lawndale Enameling Co. replaced angle-iron slats with T-section slats to obtain point contact with work during drying. Results: less enamel buildup and smaller break in coating.

Power Brushing . . .

. . . with this experimental flexible-hose unit increased production by 30 to 40%. Following this installation trial, a hood was placed over the area to collect dust.—Ceramic Ind, July, p49

Cold-Forming Metals Avoids Material Waste

For typical automobile parts, the material alone accounts for about 45% of the manufacturing cost of the finished part. So Delco-Remy Div. of General Motors Corp. turned to cold forming to eliminate waste; material savings up to 50% are common.

Generator frames are now extruded, thereby saving 2 lb. of material and producing the hole to size so that no machining of the ID is required. Extrusion replaces these former operations: welding the seam, broaching the weld, boring the ID, and facing one end.

The present method consists of grit-blasting the stock to remove scale, followed by five operations on a transfer press: (1) cut-off, (2) notch, (3) form to an oxbow shape so that the ends fit square when formed up, (4) U-form, and (5) finish form with half-round dies.

Essential parts of the extrusion die are carbide extrusion ring, arbor, and collar. During extrusion, wall thickness of the frame is first increased to ⅝ in. by an upsetting action of the collar as the frame strikes the 45° throat of the extrusion ring. Before the metal can extrude, it must fill the annular space beween ring and arbor, thereby properly sizing the ID.—Am Mach, July 20, p135

Belt-Drive Propeller Raises Airplane Climb

Considerable reduction in engine noise and vibration and a noticeable improvement in performance of a Cessna 170 have been recorded by Cessna Aircraft Corp. pilots during service tests of a V-belt propeller drive fitted to a 145-hp. Continental engine.

The modification includes fitting the Cessna with a 92-in. McCauley propeller having 70° pitch. The 170's standard prop is 76-in. The shaft was offset to allow use of the larger prop without sacrificing ground clearance. During climbing tests, the Cessna showed a 12% increase in climb performance, compared with regular-powered sister ships.

Eight synthetic fiber V-belts, ⅜-in. wide, ⅞-in. thick, and 41 in. long, are used. The large multi-groove propeller pulley is 9 in. in diameter and the driver pulley is 6 in. in diameter. Belt tension is maintained by adjusting a simple mechanism that permits the prop pulley to be moved in relation to the crankshaft pulley.—Aviation Wk, Aug 3, p21

Fluorine in Electrolyte

Recent experiments have shown that water treated with fluorine to prevent tooth decay has no harmful affects when used as the electrolyte in industrial batteries.

Tests were conducted at the Gould National Batteries laboratory at Depew, N. Y., to determine whether undistilled city water containing fluorine was harmful to batteries.

Cells containing fluorinated water were put to life tests on stands along with batteries using ordinary water. Tests took all batteries through a normal life-span in a shorter time than under actual operating conditions.

The cells containing fluorine showed no unusual behavior and in no case did they fail before the others.—Power, Aug, p123

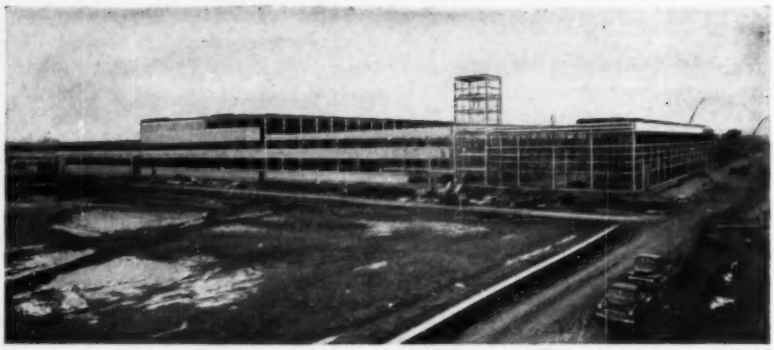
Raises Storage Space 25%

American Greetings Corp. found an easy way to get some needed space for in-process inventory. All it did was utilize its "aisle rights". And it found itself with 25% more pallet loads stored in the same floor space. American Greetings' two-point solution was:

1. **Cut Aisle Width**—It bought two non-counterbalanced straddle-fork trucks that would work in 6½-ft. aisles. Old layout called for 8½- to 11-ft. aisles for counterbalanced fork trucks.

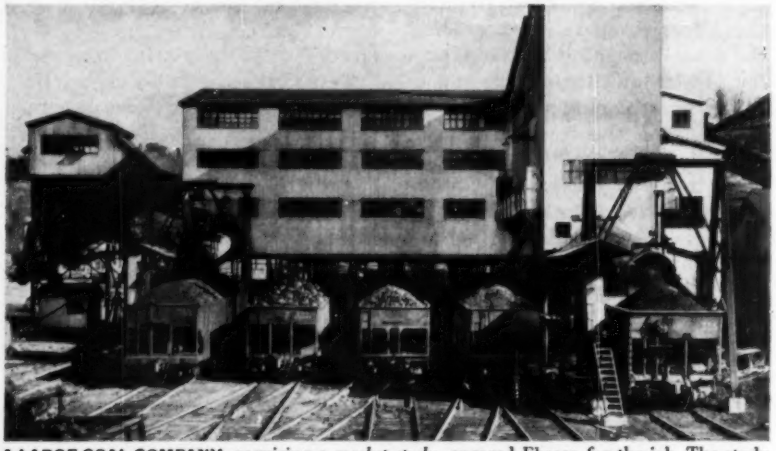
2. **Stack Deeper**—Studies showed that a change from two- and three-deep to three- and four-deep stacking would save lots more space without need for more equipment or manpower to get at "buried"stock. Material in the inside tiers is lower turnover material.—Factory, Aug, p92

A LUMBER COMPANY called in Ebasco specialists to make an *engineering study*. Providing an unbiased outside viewpoint, the study was used to improve lumbering operations.



ONE OF THE LARGEST APPLIANCE MANUFACTURERS selected Ebasco to *design and build* this giant plant at Columbus, Ohio. When completed, it will be nearly half a mile long and capable of turning out 4,500 refrigerators a day.

A BAKING CONCERN required assistance in making a *financial study*. Rather than add financial specialists to its permanent payroll, they called in Ebasco to do the job.



A LARGE COAL COMPANY, requiring a *market study*, engaged Ebasco for the job. The study analyzed changes in the anthracite market, the company's dealer and sales organization, sales outlets, possible new uses and markets for anthracite. Ebasco has made sales and marketing studies of both wholesale and consumer markets in many other fields of business.

HOW BUSINESS AND INDUSTRY GET EXTRA MANPOWER

Companies Call on Outside Specialists to Solve Special Problems

A ROPE COMPANY engaged Ebasco to make a *business study* of its operations. This Ebasco report provided management of the company with a workable "blueprint for future action."

As industry grows, so do the problems industry faces. These problems are just as common—and just as complex—to small firms as they are to large corporations. That's why companies of different sizes, in different fields, call on Ebasco to supplement the personnel of their own organizations.

Ebasco specialists—men whose technical talents are at a premium in today's tight manpower market—provide these companies with required services without adding to permanent payrolls, over-burdening busy staffs or wasting the valuable time of top executives.

Perhaps Ebasco can provide extra manpower to help solve *your* special business problems. For your copy of our booklet, "The Inside Story of Outside Help," write: Ebasco Services Incorporated, Dept. D, Two Rector Street, New York 6, N. Y.

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ENGINEERS · CONSTRUCTORS · EBASCO · BUSINESS CONSULTANTS

Ebasco Teamwork gets things done anywhere in the world

Aerosol Packaging Boom

This year the aerosol-dispensed specialties may edge the 140-million production mark as consumer acceptance grows and as cosmetics and toiletries expand rapidly in this pushbutton business

CHEMICAL SPECIALTIES, cosmetics, toiletries have all combined to make aerosol packaging a top growth industry. In 1 year—from 1951 to 1952—the number of pressure-packaged containers more than doubled in the U. S. and Canadian markets.

In 1951, about 41-million containers were filled. In 1952, according to a Chemical Specialties Manufacturers Association survey, the number zoomed to over 96-million. This year, the industry looks for 140-million. And this figure excludes all food products, such as whipped cream.

Why this astounding growth? The answer is that people have accepted the convenience of dispensing a product by merely pushing a button and are willing to pay for it. Besides, the aerosol form of some products works better than they do when dispensed in other ways.

Aerosols got their start during World War II when the U. S. Department of Agriculture discovered that small amounts of insecticides dispensed as fine particles by propellent gases were extremely effective against flying insects. This discovery led to the development of the heavy, high-pressure aerosol "bomb."

These early insecticides were true aerosols as they were in the form of fine particles dispersed in air. Present-day insecticides and room deodorants are also in the aerosol class, but the term "aerosol" as now used includes two other types: (a) wet sprays for surface coatings and (b) foam products.

True aerosols contain a solution of an active ingredient and propellent in a closed container having a standpipe and valve. Part of the propellent remains in solution, part in gaseous form fills the head space of the container. When the valve is opened, the vapor pressure of the gaseous propellent pushes solution up the pipe and out the nozzle. The dissolved propellent instantly becomes a gas and disperses the active ingredient into fine particles.

The other two types work much like the true aerosols. Less propellent is needed and the pressure is lower for the surface-coating sprays. Foam products also require less propellent but are under higher pressure; they have the active ingredient emulsified with the propellent. As the emulsion emerges, the propellent particles expand, turning the formulation into a lather of minute bubbles.

The war-time aerosol bomb employed Freon 12 as a propellent under a pressure of 70 lb. per sq. in. at 70°F. Research showed that mixing the propellent with other gases would permit lowering the pressure. Containers—the familiar "beer can"—are now packaged at 25 lb. per sq. in. for 75% of all units.

The output of low-pressure

aerosols began in late 1947. Air deodorants were soon on the market, along with insecticides. Other products were added rapidly until now about 40 different aerosol items are stocked on store shelves. All these items must meet rigid governmental specifications as to packaging and labeling.

Two methods of filling aerosol containers are now in use—cold filling and pressure filling. In cold filling, refrigeration equipment cools the propellent so it can be handled as a liquid; most products are packaged this way. In pressure filling, which was the method of packaging the original high-pressure product, containers are filled with pressurized equipment at room temperature.

The trend toward companies packaging their own products has meant a resurgence in pressure filling. The gasifiers, which introduce the propellent into the can through the valve, are relatively inexpensive, compared with refrigeration equipment.

A filling line, according to Majonnier-Dawson Co., Franklin Park, Ill., can cost anywhere from $5,000 to $30,000. A semiautomatic unit can pack 15 to 20 cans per min., an automatic unit 30 to 120.

These estimates come from Alpha Engrg. Co., Chicago: $25,000 to $30,000 for a 60-per-min. cold fill, including refrigeration; $20,000 for a pressure-fill line of the same capacity; and $4,000 to $10,000 for a hand-operated table model filling 10 to 15 cans per min.

The only other company closely identified with selling filling equipment is Oil Equipment Laboratories, Elizabeth, N. J. This company has developed a valve and mechanism suitable for pressure filling; machine price is under $5,000.

Which method is the better is open to argument. Proponents of cold filling cite the higher production rate possible as the propellent is put directly into the can, not forced through the valve. They claim also that all air and vapor are expelled by evaporation of some of the propellent between the time the can is filled and the top (or bottom) is crimped into place. This evacuation is important as air promotes corrosion and may increase the pressure beyond the safe range. Another claim is that pressure filling loses propellent and is inaccurate.

Here Is the Aerosol Record
(in cans filled)

Product	1951	1952
Space Insecticides	18,503,252	31,517,474
Residual Insecticides	1,183,164	1,749,490
Mothproofers	964,836	1,962,341
Room Deodorants	8,743,171	12,410,268
Pigmented and Metallic Paints	2,136,789	4,487,408
Clear Plastic Sprays	1,142,625	2,234,471
Other Household Products	262,544	3,099,868
Shaving Lather	(Included with "Other" Personal Products")	16,682,378
Other Personal Products	4,379,276	8,766,809
Miscellaneous Products	3,573,002	13,098,049
Total	40,888,659	96,008,556

But cold filling too has limitations. It cannot package cold-sensitive materials, such as shaving lather, that become thick at low temperatures. These materials must be pressure-filled.

As far as air evacuation is concerned, pressure-filling equipment is now available that may have an evacuation stage added for products in which air is critical—as in space sprays. The manufacturers claim also that gas loss is low and accuracy is high.

The propellents that make aerosol packaging possible are fluorinated hydrocarbons, tradenamed Freon by Du Pont and Genetron by General Chemical Co. They are nonflammable, nonexplosive, nonirritating, colorless, essentially odorless, and of low toxicity.

The important propellents are trichloromonofluoromethane (Freon 11 and Genetron 11) and dichlorodifluoromethane (Freon 12 and Genetron 12). A 50:50 mixture of these two materials (11/12) supplies about two-thirds of the aerosol business. It is used for insecticides, hair lacquers, coating materials, room deodorants, and others. Price is 22¢ per lb.

Next most widely used is dichlorodifluoromethane — for paints, some foam products, suntan oils, household oil. Price is 26¢ per lb.

Other propellents include DuPont's Freon 114 mixed with Freon 12 (for shave foams); Freon 21, Freon 22, and Freon 113 for special purposes; General's Genetron 101 for lower pressure than the 11/12 mixture (for underarm deodorants and perfumes); Genetron 102 J for paints, lacquers, and snow products; Genetron 102 P for higher pressures on paint and lacquer.

A few formulators use methylene chloride to replace the "11" compound in the 50:50 11/12 mixture. It is cheaper, and it is also a good solvent for DDT and methoxychlor. But it is more toxic than standard propellents. Being such a good solvent, it may damage finishes, plastic curtains, and other materials.

A common question about aerosol packaging is its cost. Here are a few cost breakdowns:

- 12-oz. insecticide (85% propellent—15% active): can, 4¢; valve, 7¢; gas, 16¢; concentrate, 17¢; filling, 5¢; carton, 1¢; essential oil, 0.6¢. Total: 50.6¢.
- 6-oz. room deodorant (90% propellent—10% active): can, 4¢; valve, 7¢; gas, 8.4¢; concentrate, 3¢; filling, 5¢; carton, 1¢. Total: 28.4¢.
- 6-oz. shave cream (10% propellent—90% active): can, 4¢; valve, 7¢; gas, 2¢; concentrate, 3¢; filling, 5¢; carton, 1¢; essential oil, 0.3¢. Total: 22.3¢.

These estimates are approximate, but they give an idea of how big the field is in terms of dollars. And it is still growing. The adoption of aerosol packaging by cosmetics and toiletries particularly will continue the field's rapid growth.—Chem Wk, July 18, p38

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New Cat Process Gives High-Octane Gasoline

Pilot-plant operations at Sinclair Refining Co. of its new catalytic-reforming process are giving excellent yields of high-octane products. The process utilizes a new platinum catalyst. Results show that the catalyst:

- **Maintains** high activity over long periods of time, thereby lowering catalyst costs.
- **Has great ability** to convert low-octane paraffin components to high-octane aromatic gasoline.

The catalyst was developed in conjunction with Baker & Co. and is called Sinclair-Baker RD-150. Used in conventional three-reactor fixed-bed units, it permits operations at low pressures with catalyst regeneration or at moderate pressures under continuous operating conditions.

Test runs have been made for naphthas from four different crude oils. Data show satisfactory yields and octane ratings.

The first commercial unit is now being built at Sinclair's Marcus Hook refinery. Capacity will be 16,000 bbl. per day of naphtha feed stock. Initial operation is scheduled for next summer.

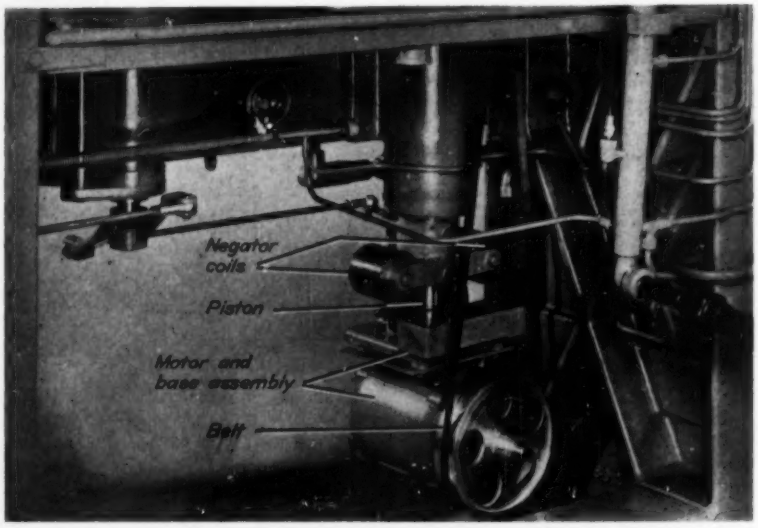
Under agreement with Sinclair and Baker, M. W. Kellogg Co. will offer the catalyst in the new process.—Oil & Gas J, July 20, p64

Built-in Carton Spout

New built-in pouring spout for paper-board cartons snaps shut with a positive seal. The spout, known as Flo-Seal, is an integral part of the carton. It is formed by making special die inserts a part of the cutting and forming process.

The Flo-Seal spout forms an air-tight seal claimed to be infestation and sift proof. When it is open, the product in the carton can be poured without spillage. The spout is adaptable to soaps, detergents, flour, salt, cereals, powders.

The spout was developed by Henry Phillips, the inventor of the Phillips recessed-head screw. License rights are owned by Delaware Pacific Corp. Container Corp. of America has been licensed to use the spout and is going into commercial production. —Paper Ind, July, p435



Springs Replace Counterbalance

Pratt & Whitney Div., Niles-Bement-Pond Co., has put two Neg'ators (McG-H Digest, Sept '49, p36) to work on a new airfoil grinding machine. The Neg'ators, constant-force springs made by Hunter Spring Co., replace a dead-weight system to insure constant belt tension. Neg'ators permit rotation of vertical grinding-system axis to maintain grinding action normal to any part of twisted airfoil during cycle. They also produce a more compact design.—Prod Eng, July, p168

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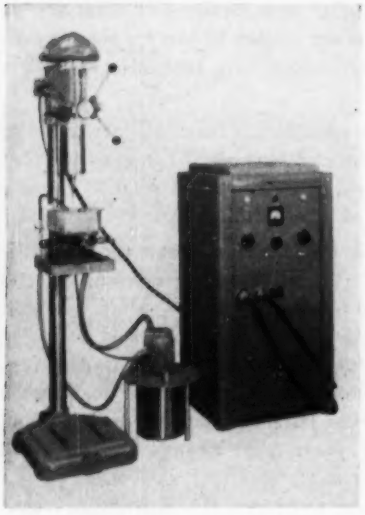
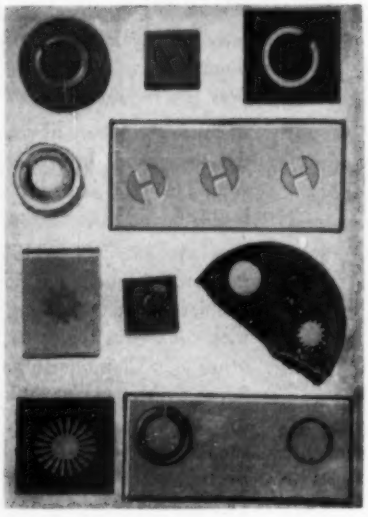
MD-9-53

NEW PRODUCTS

Ultrasonic Tool Cuts . . . These Shapes Cleanly





New Sonic Energy Machine Tool Will Cut Plain or Fancy Shapes

A new machine tool—driven by ultrasonic sound waves and vibrating approximately 2,700 times per second—cuts plain or complex designs in hard materials with great accuracy. Actual tolerances of the work being machined are limited only by the accuracy of the die being used or the dimensions of the shaped tool.

The tool can be made of relatively soft materials. Yet it effectively cuts hard steel, glass, ceramics, or even precious stones. The pieces worked on need not be made of conductive materials. The motion of the tool—only a few thousandths of an inch each way—is invisible. But its great velocity is the key to its efficiency.

For operation, the work is clamped firmly in place and the tool is lowered until it contacts the surface. A liquid abrasive flows over the piece to be machined, then the power is turned on.

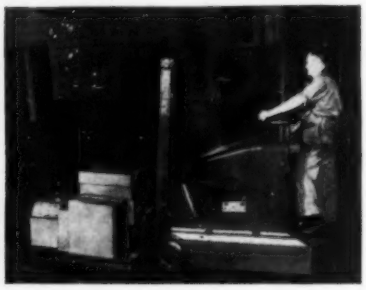
The abrasive particles in the continuously flowing liquid are driven by the tool with ultrasonic speed. The acceleration causes the particles to hit the work with a force of 5,000 to 10,000 times their normal weight. This action cuts away the material.

In its present form, machine resembles a conventional drill press. Other models, however, are now being designed to perform the functions of a lathe, milling machine, boring mill, shaper, saw, planer, and router.—**Raytheon Mfg. Co., Waltham 54, Mass.**—Factory, Aug, p140

Meets Accounting Needs

Series 500 Sensimatic Accounting Machine features 19 totals. Machine is ideal for figuring a payroll with a large number of deductions or for applications where it is desirable to list two sets of figures and simultaneously make a maximum distribution.

Model is also useful for fiscal accounting, where it is desired to compute multiple balances and vertical totals of many separate categories or items.—**Burroughs Adding Machine Co., Detroit 32, Mich.**—Am Business, June, p51



Close-Quarter Fork Truck

Electric "stand-up" fork truck, the Stoway, can operate in its own length. Turning radius is 60 in. It is designed for close quarters and narrow aisles and for jobs that require operator to mount and dismount continually.

Capacity is 2,000 lb. at 24 in. Speed is 6 miles per hr. loaded. Automatic acceleration system has preset time delay between each point of power. Motor cannot be overloaded by fast shifting or applying forward and reverse power at the same time.—**Clark Equipment Co., Battle Creek, Mich.**—Ceramic Ind, July, p17

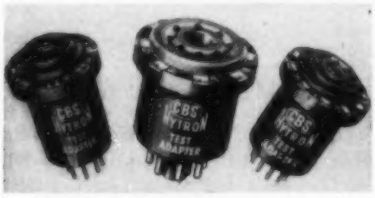
Heat-Sensitive Cable

A newly developed cable, impervious to normal high temperatures but alert to the slightest flame, has been developed for aircraft use.

Constructed of a Thermistor material, the cable is said to function without electronic amplifiers and realarms as often as necessary, even after repeated exposure to flame of up to 2,000°F. It is expected to save many lives and much costly equipment in military aircraft alone.—**Thomas A. Edison, Inc., West Orange, N. J.**—Auto Ind, July 15, p76

Silicone for Laminates

New 2105 resin gives silicone-glass laminates over 100 times the dielectric life of the best silicone-glass laminates previously available. Also, laminates are easier to make—at pressures from 300 to 1,000 lb. per sq. in. at 175 to 250°C. —**Dow Corning Corp., Midland, Mich.**—Chem Eng, Aug, p329



Circuit Test Adapters

Available in three sizes—7-pin, 9-pin miniature, and 8-pin octal—these test adapters allow repairmen to check sockets without removing chassis. There is no need to disturb wiring or parts, just plug tubes into test adapters and adapters into sockets.—**CBS-Hytron Div., Columbia Broadcasting System, Inc., Danvers, Mass.**—Electronics, Aug, p316

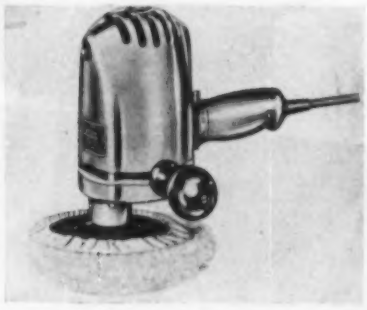
For High Overhead Work

Repairs and installations to a height of 34 ft. can be made with the Hydro Sky-Lift. At the end of the boom are two crow's nests, each large enough for one man. Nests have hydraulic controls.

The boom is mounted on a heavy-duty chassis that is stabilized with hydraulic outriggers. It can rotate in the upper half of a 26-ft.-radius sphere.—**Yale & Towne Mfg. Co., Philadelphia 15, Pa.**—Pet Proc, July, p1092

Flame-Spraying Equipment

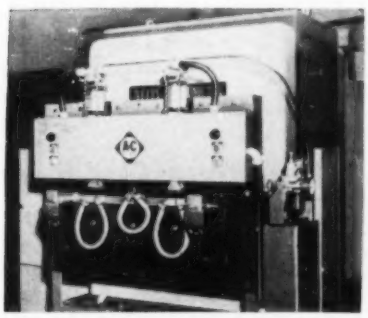
Coatings from thermoplastic materials, such as polyethylene, that do not readily dissolve in common solvents at normal operating temperatures can be applied with Flame Spray gun and material hopper. Coating thicknesses from $\frac{1}{32}$ to $\frac{1}{4}$-in. can be obtained.—**American Agile Corp., P.O. Box 168, Bedford, Ohio.**—Mod Plastics, Aug, p150



Tool Polishes and Sands

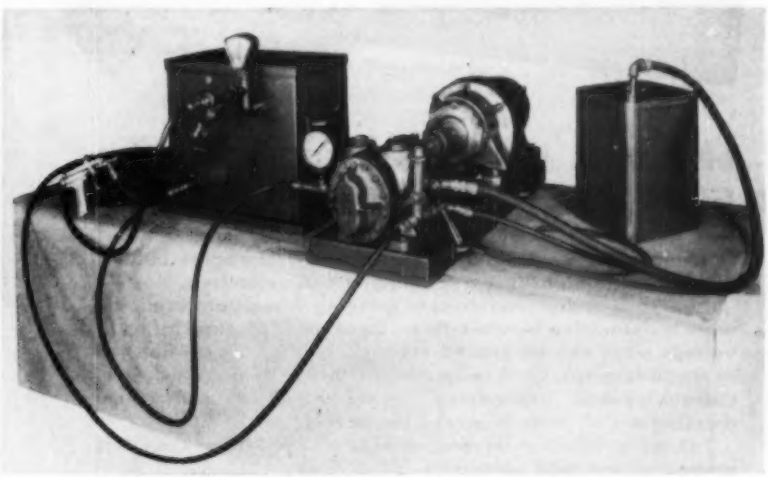
New electric sander-polisher with attachments and accessories is suitable for sanding, polishing, buffing, drilling, light bench grinding, and wire-brush work.

No. 966 electric sander-polisher comes complete with lambs-wool bonnet and sanding disks.—**Syntron Co., Homer City, Pa.**—Ind Dist, July, p164



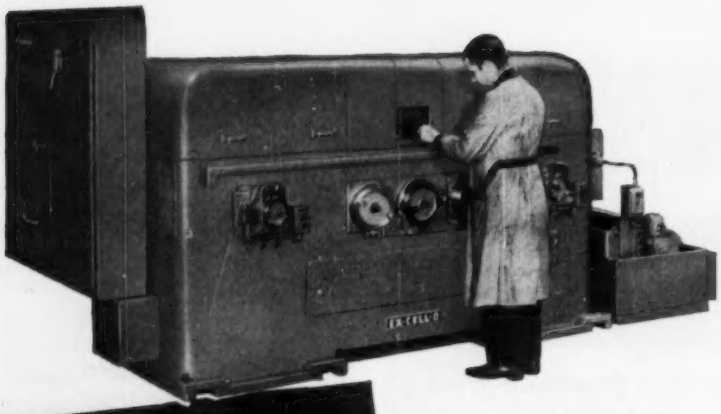
Two-Station Heater

Air-operated, electrically controlled fixture allows use of two work coils on 10-kw. and 20-kw. induction heaters. Fixture provides two separate bus bars for coils. While one work coil heats the metal part, the operator unloads and reloads the other coil. Thus the same amount of work can be done with one heater that would normally be done in two.—**Allis-Chalmers Mfg. Co., Export Division, Milwaukee 1, Wisc.**—Iron Age, June 18, p128



No Air Needed To Spray Hot Paint

Airless spray painting delivers heated paint by hydraulic pressure. The paint is atomized by sudden release of internal forces of expansion. Heating the paint so part of the solvent is close to the boiling point builds up vapor pressure. As the whole system is under pressure (300 to 600 psi.), solvent does not boil but bursts into gas upon release to atmosphere, thereby doing the atomizing. Advantages claimed are reduced over-spray, improved finish, better paint adhesion. Lacquers, synthetics, wrinkles, varnishes, and other finishes can be sprayed.—Bede Industrial Products, Inc., 1110 Brookpark Road, Cleveland 9, Ohio.—Am Mach, Aug 3, p164

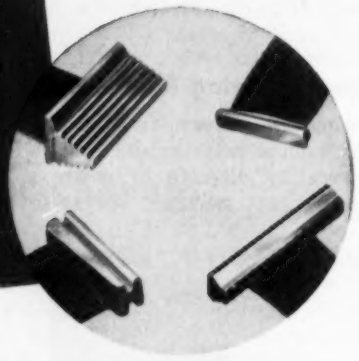


Style 85 Precision Two-Wheel Form Grinder for grinding roots of jet blades.

EX-CELL-O

XLO

Dovetail and pinetree forms, in various sizes, are ground from rough forgings.



PRECISION TWO-WHEEL FORM GRINDER GIVES FINE FINISH, HIGH PRODUCTION

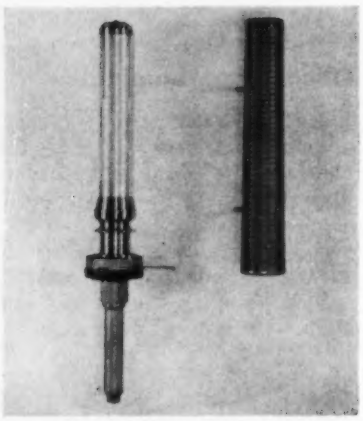
This Ex-Cell-O Precision Two-Wheel Form Grinder finishes simultaneously both sides of the roots of jet engine blades. It is fully automatic except for loading and unloading.

Two 24-inch diamond-dressed grinding wheels are used, the work reciprocating between them. Dovetail or pinetree forms of various sizes can be ground economically from semi-finished or rough forgings. Work reciprocation, wheel feed to finish size, coolant control, unclamping, wheel retraction, and wheel dressing are all done in an automatic cycle.

For more information and complete specifications on this production machine contact Ex-Cell-O, Detroit, U.S.A.

53-11

EX-CELL-O CORPORATION



Spins More Yarn per Doff

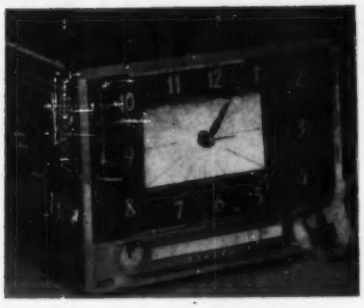
Antifriction ball-bearing spindle for paper tubes is equipped with a foot-step dampening device that requires lubrication only every 2 years. Bobbins are positively gripped by centrifugal force and are evenly seated throughout the frame. The spindle has a finger-operated brake that stays on until released so that piecing up will be easy for the operator. Less operator fatigue assures high output.

No important changes are necessary on present spooling, dressing, and winding equipment to accommodate the new bobbin. Yarn weight per bobbin will vary from 19 to 26 oz.—about twice as much yarn as is wound on the ordinary wooden bobbin.—**Davis & Furber Machine Co., North Andover, Mass.**—Textile World, July, p143

Package Water Conditioner

Conditioner is available in eight standard sizes from 500 to 3,300 gal. per hr. and flows of 12,000 to 79,000 gal. per day. Each complete conditioner consists of a precipitator (with built-in clearwell), proportioning chemical feeder control, coagulant feeder tank, lime or soda ash hypochlorite feeder tank, inlet float control valve, Neutralite filter unit, Carbo-Dur purifier unit, and service pump.

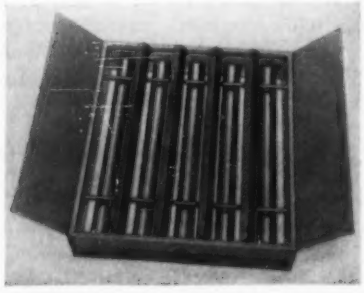
Units may be used to remove turbidity, color, and organic matter from water supplies; to chlorinate; to remove bad tastes, odors, iron, and manganese; and to neutralize, soften, and dealkalize.—**Permutit Co., 330 W. 42nd St., New York 36, N. Y.**—Power, Aug. p155



Dial Lighted By Glass

A lamp, no thicker than a pane of glass, lights the dial face of a new line of radio clocks. It is a sandwich-like luminous condenser consisting of a sheet of glass coated with a thin layer of special phosphor. A thin metallic back completes the sandwich.

Two fine wires—one attached to the edge of the conducting glass, the other to the metallic backing—pick up current from 120-volt, a-c. circuit. Brightness is controlled by a knob on the back of the set. The lamp does not use bulbs, tubes, filaments, or cathodes.—**Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.**—Elec Whols, Aug, p5



Grate Magnet For Foods

Iron contamination is taken from many free-flowing materials with permanent grate magnet.

It can be put in hoppers, floor openings, vertical closed chutes, or wherever space is limited. Unit consists of a series of 1-in.-dia. stainless-steel tubes. Inside are Alnico U magnet castings. Rugged steel grill serves as baffle to slow down materials traveling at too high a speed.

Unit comes in sizes 2 to 36½ in. wide; 4 to 36-in. long.—**Eriez International Co., Erie 2, Pa.**—Food Eng, Aug, p100

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That's how fast an employee *working for you now* learns to operate the Remington Rand Bookkeeping Machine! Name a job: payables, receivables, general ledgers, payroll, cost distribution, sales analysis, inventory — *this one machine does them all!* What's more, it switches from one job to another *in seconds* as the work schedule requires.

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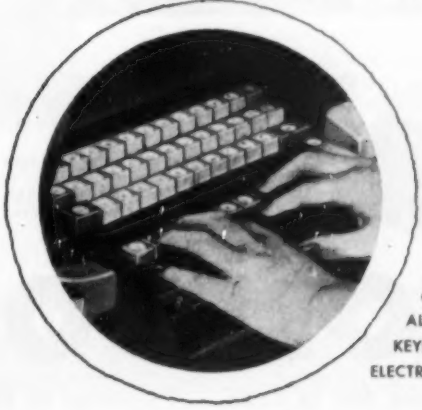

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NEW PRODUCT BRIEFS

Multi-purpose Crane—New 1-cu. yd. or 25-ton capacity crane known as Lima Type 44 is available with either crawler or rubber mountings. As a shovel, it is equipped with a 20-ft. boom and 18-ft. dipper handle. Crane booms are available up to and including 100 ft., less jib. Jibs 15, 20 or 30 ft. long are available. Unit can be converted in the field.—**Baldwin-Lima-Hamilton Corp., Lima, Ohio**—Const Meth & Equip, Aug, p140

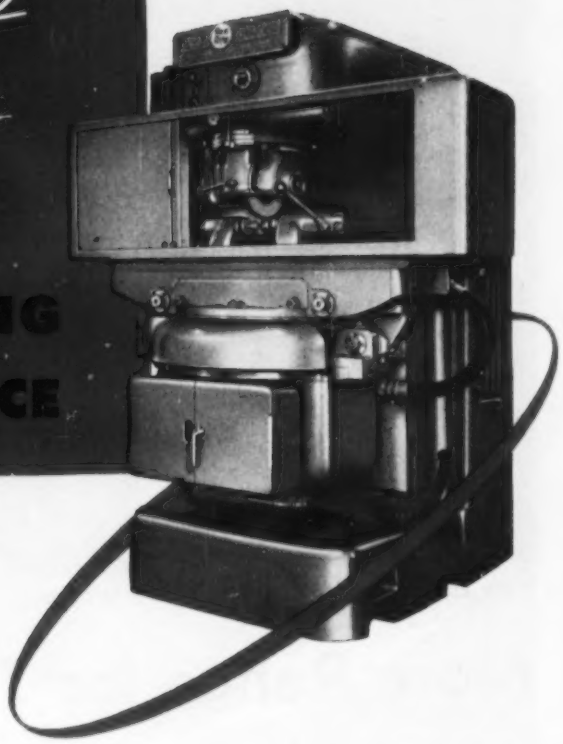
Nylon Wiper Motor—Unit for heavy trucks weighs 10 oz., has no springs; only steel parts are screws and stainless-steel shaft. Air-push motor has "O" ring construction in valve and piston. It is available in colors to match cab.—**Sprague Devices, Inc., Michigan City, Ind.**—Fleet Owner, Aug, p76

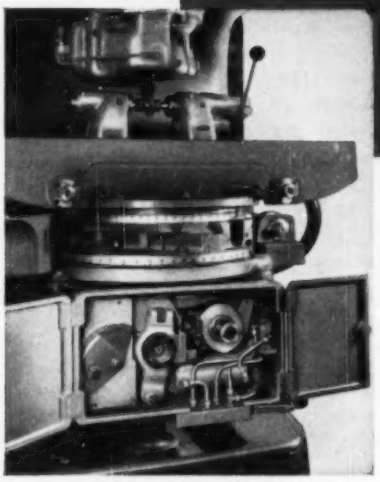
Roller-chain Sprockets—Sprocket wheels with taper-lock bushings can be securely mounted on a shaft without reboring, making the equivalent of a shrink fit. Action of the taper-lock bushing assures tight fit within the full range of normal shafting tolerances. New line for single-width chains of ½-, ⅝-, ¾-, 1- and 1¼-in. pitch is now available from stock.—**Link-Belt Co., 2680 Woolworth Bldg., New York 7, N. Y.**—Coal Age, Aug, p118

Stitches Cartons—New carton stitching method arcs flat stitching wire, then drives and clinches it at high speeds. Stitches are strong, light, free from buckles. Other advantages: little or no jamming, long operating periods, no puncturing of box liners.—**Acme Steel Co., 2836 Archer Ave., Chicago 8, Ill.**—Paper Ind, June, p366

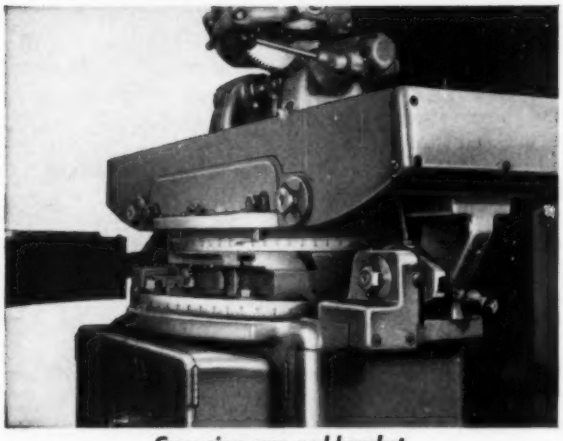
New Softening Agent—Cationic softening agent developed for synthetic fibers and fabrics improves hand and pliability and reduces static electricity. Called Avitex NA, the softener has high resistance to discoloration and has good substantivity for the water-insensitive textile fibers as well as for rayon, cotton, and mixed-fiber construction.—**E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.**—Textile World, July, p156

An Important Contribution To GEAR SHAVING PRACTICE





Differential up-feed mechanism



Crowning cam and bracket

Two new features are now optionally available with the Red Ring Gear Shaving Machine Model GCU — Automatic Differential Up-feed and Conventional Crowning. So equipped, any of the recognized processes in the field of rotary gear shaving may be performed on this machine. It thus becomes economically applicable to both high production and to job shop operations and to gears of all characteristics within its size range.

Specifically the Model GCU with these additions can be used for:

(1) Diagonal shaving at fixed center distance on a two stroke cycle.
(2) Diagonal shaving on an automatic multi-stroke cycle with selected increments of up-feed and dwell.
(3) Conventional shaving on an automatic multi-stroke cycle with selected increments of up-feed and dwell.
(4) Precision gear crowning accomplished by rocking the table during any conventional shaving cycle.
(5) Taper shaving to specification.

Automatic cycling is precise and very fast. Production rates are high and cutter life has been increased to as much as 200%.

Write for Bulletin S53-7 which gives all the details of this important new development.

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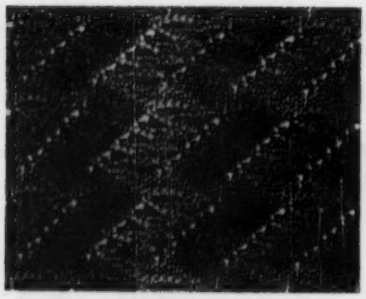
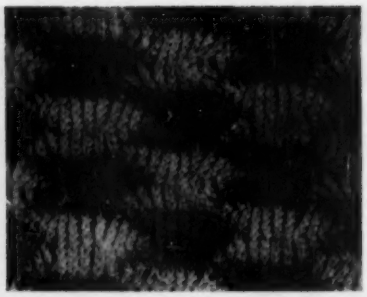
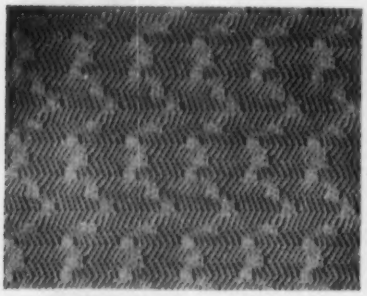


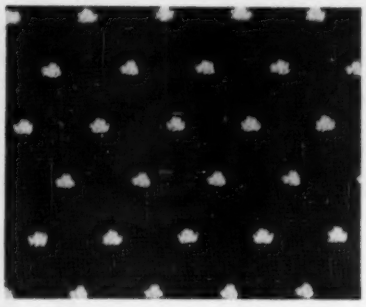
Single-Bar Cut-Presser Fabric



Three-Color Fabric



Knop Effect



White Spot on Colored Background

More Range for Tricot

If you are looking for a wide range in tricot designs, then this new idea may be what you need. Mispressing certain needles opens the way for new designs

As THE DEMAND for novelty tricot fabric grows, the tricot knitter searches for new ideas. The cut-presser machine extends the scope of the tricot machine, and an unlimited range of patterns is opened up when these machines are fitted with three guide bars.

Four typical cut-presser fabrics described here are made with (1) one cut-presser bar and one guide bar; (2) two guide bars and one cut presser; (3) two guide bars, a plain presser, and a cut presser; (4) three guide bars, a plain presser, and a cut presser.

A cut presser is used on a spring-needle warp-knitting machine whenever some beards are required to be closed and not others. The working edge of the presser is cut away where the beards are required to be left open. When the needles are drawn down, the old loops slide under the open beards that are opposite the cutaway part of the presser edge, and a stitch similar to a held stitch in circular-knitted fabrics is formed.

Two methods cause the needles to be successively pressed and mispressed. One method employs one cut presser that is shogged sideways, in a manner similar to the guide-bar movement, by a pattern chain. This presser can be moved one needle space at a time or it can be made to jump several needles.

The other method, employing the same principle, has a plain presser in addition to the cut presser. The cut presser is put into action at every course, whether the plain presser is in action or not. The plain presser must be taken out of action at intervals so that the cut presser can do its work. The cam follower of the plain-presser lever is moved away from the presser cam onto an inoperative cam, or the cam is moved along a keyway on the shaft. This action imparts no forward movement to the solid presser.

Cut-presser machines frequently produce spot and knop effects in solid color or in two or more colors. These effects are made with a cut presser working in conjunction with a plain presser.—Textile World, Aug, p101

Rubber Blanket Seals Hydro Plant Tunnel

Plans for construction of an earth dam on the Socandaya River in New York State called for its completion when water level was lowest. The diversion tunnel was to be sealed up then and the dam filled. But construction was held up until it was necessary to discharge reservoirs upstream to keep waters below the dam navigable. The diversion tunnel could not be plugged because most of the water had to be by-passed.

The job of filling was done by putting steel stop logs in the diversion tunnel, spaced to allow water to build-up in the dam slowly. After the dam water rose enough to allow regulation by spillway gates and turbine runoff, engineers at the dam lowered a rubber curtain over the diversion tunnel from the upstream side.

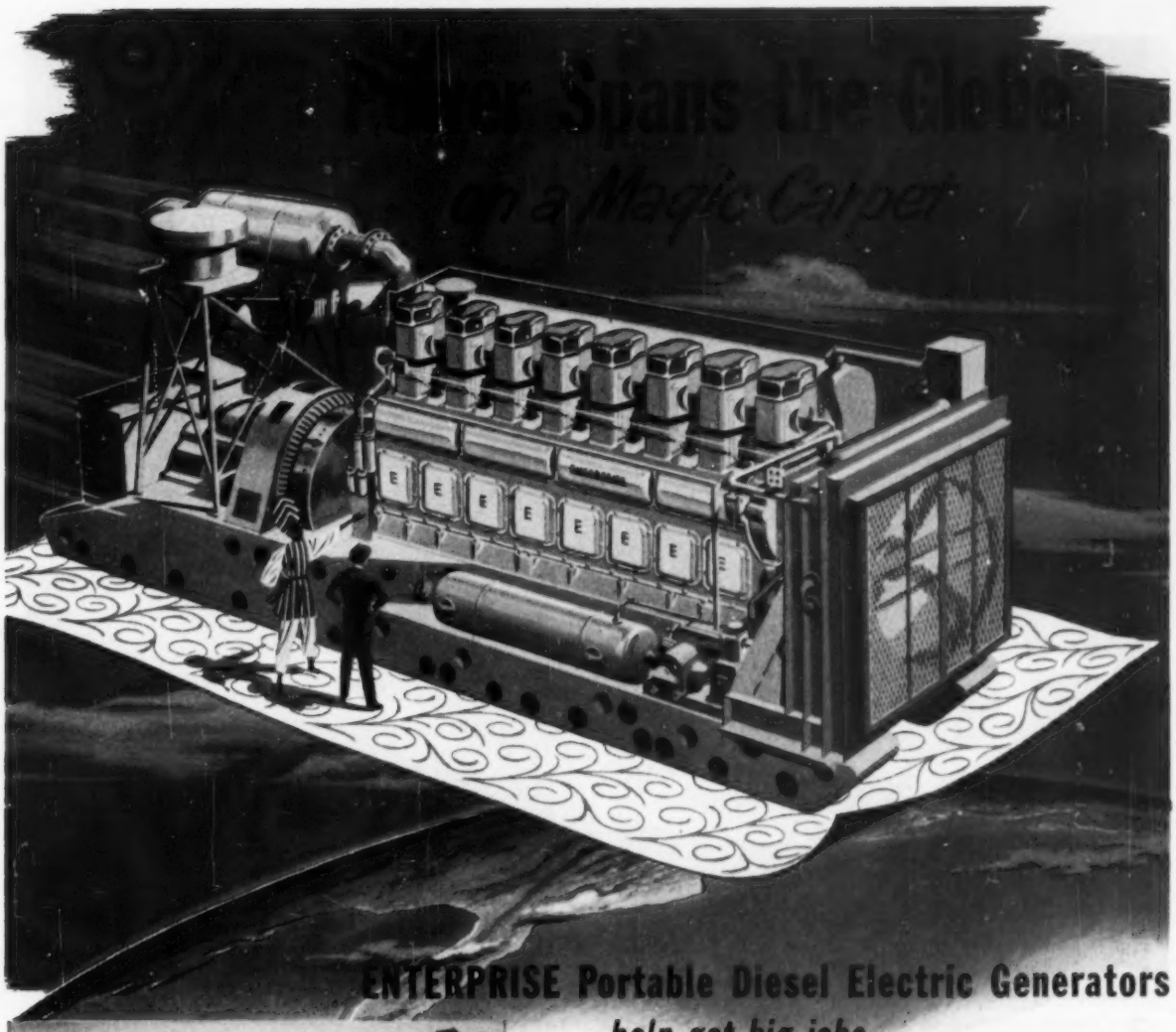
Leakage was small and eventually sealed itself completely with cinders and earth fill. Permanent closing was done with concrete. —Elec World, June 22, p36

Huge Stretcher Welded

Two huge weldments will form the bed of a giant stretcher at the Aluminum Co. of America's Lafayette plant. One weldment, 138 ft. long and 123 tons in weight, recently arrived at the plant.

The completed stretcher will be about 180 ft. long and 5 ft. wide and will weigh over 1,000 tons. It will straighten and relieve strains in extruded aluminum-alloy aircraft parts up to 110 ft. long and 60 sq. in. in cross-sectional area. It will be able to exert a pull of 3-million lb.

The stretcher, designed by Alcoa engineers, will need a foundation of 1,500 cu. yd. of concrete reinforced with 23 tons of steel reinforcing.—Weld Eng, July, p54



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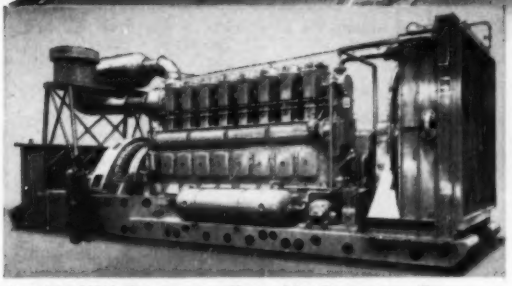

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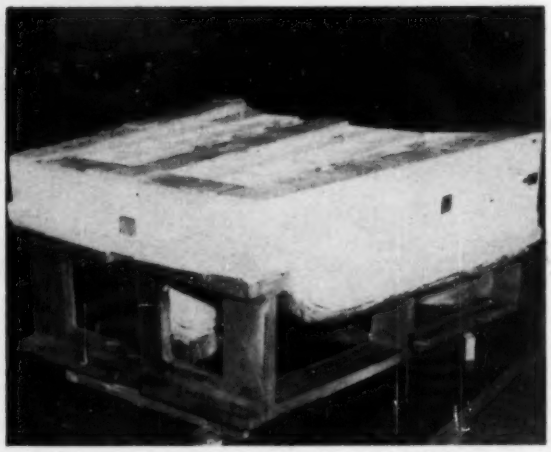
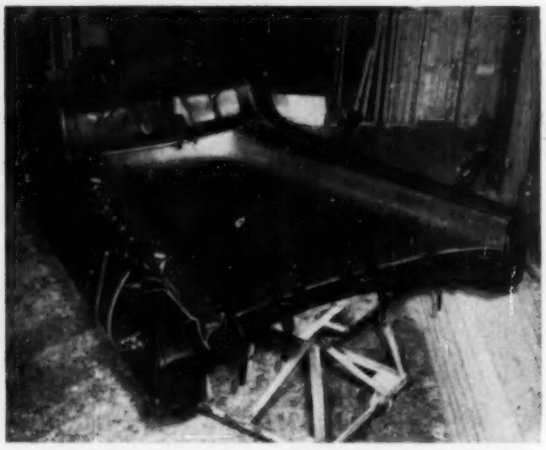
1 Gray-iron casting is cleaned and sandblasted to prepare the surface to receive a glass-laminate coating.



2 Laminate is built up on model and bonded to casting by pressure. Whole is reversed. Model is removed.

3 Laminate coating is now firmly joined to the gray-iron casting to form accurate wear-resistant surface.



4 Assembly fixture is completed by mounting work clamps. Hood stamping is shown in place on fixture.

Plastics Speed Tooling Work

Some of next year's automobiles will have tooling programs speeded up by use of glass laminate-coated assembly and checking fixtures

ASSEMBLY FIXTURES for several 1954 lines of automobiles are being built in record time by making them of cast iron coated with a plastic laminate. No machining is needed. And the method is particularly attractive for short-run jobs.

The casting itself is made in the same way as other fixture castings, except that it is made undersize. No stock need be left on the casting for machining, and its dimensions are later built up by adding the laminate coating.

After shakeout, the casting, in this case an automobile-hood fixture casting made by Detroit Gray Iron Foundry Co., is well cleaned. Gates and risers are removed. Then the casting is sandblasted, chipped, then sandblasted again to improve the surface and insure a good bond with the plastic laminate.

The laminate coating is built up separately and bonded to the cast-iron fixture. This operation is begun by covering the wood die model with wax sheets of the same thickness as the steel part—the car hood. Then a master mold is made of plastic.

From this master mold, a reverse model of the master is

cast. This model is similar to the original wood model. A filled-in plywood backup is added to support the model.

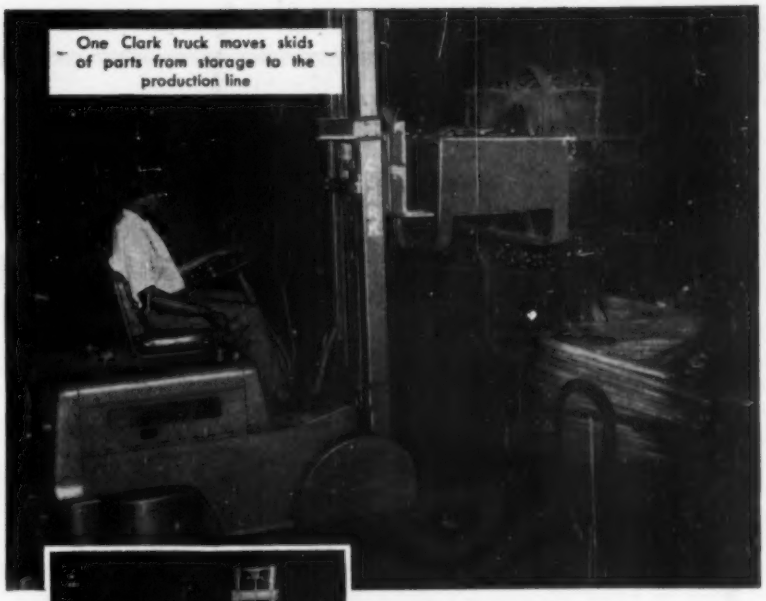
The laminate is built up on this model. First, a parting solution is applied to the surface of the model, followed by a waxed and polished layer about $\frac{1}{32}$ in. thick of Ren-ite surface coat mix, RP 1120. The mix, made by Renaud Plastics, Inc., is furnished in two cans—in one the basic material and in the other the hardener. The materials are mixed just before use.

After the surface coat has set, which takes about 40 min., layers of glass cloth and the laminating resin, Ren-ite RP1130, are added to build up the laminate. The thickness of the laminate varies from $\frac{1}{4}$ to $\frac{1}{2}$ in., depending on the part and application. Usually six layers are enough.

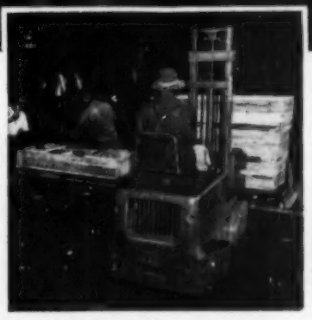
The casting and laminate are then placed one on top the other. After several hours, the laminate is cured and bonded securely to the casting. The model is then removed, leaving on the casting a plastic coating that provides a wear-resistant, accurate surface. The coating is also resistant to acids, greases, and organic solvents. The fixture is completed by mounting the clamps required to hold the work securely.

Checking and welding fixtures, as well as assembly fixtures, can be made quickly by this method. Other industries besides the automotive that can apply the method include the aircraft, appliance, metal-furniture and tractor industries. If desired, hand-built service parts made of plastic laminate can be made either for experimental purposes or in short-run production lots.

Ren-ite materials are also useful in making models, prototypes, spotting racks, panels, and forming dies. Besides being noncorrosive to tools and fasteners and curing at room temperature, the bonding resin can save up to four-fifths the weight of wood models, needs no brass edges as it is not brittle, has good dimensional stability, requires no refrigeration of the packaged material, and can be mixed without special mixing equipment.—Iron Age, Aug 6, p136



One Clark truck moves skids of parts from storage to the production line



Collecting crates of finished products for delivery to the railway cars

Placing crated goods at the railway siding for shipment

FROM START TO FINISH OF PRODUCTION,

CLARK fork trucks

Cut Costs!

Here's another case which shows how a progressive company cuts costs with Clark equipment. South African Farm Implement Manufacturers Limited (Vereeniging, Transvaal) uses Clark fork trucks in almost every department of their factory. The system of Clark handling *between* departments covers every phase of the manufacturing process, with these results:

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Genray Process for Rayon Gives Level Vat Dyeings

Dyeing of pigment-padded vat colors on rayon piece goods has always been a problem. Now Bradford Dyeing Assn. thinks it has the problem solved. It is using the Genray procedure, developed by General Dyestuff Corp., in which the speed is restricted to between 20 and 40 yd. per min., and the reduction potential is checked and recorded by the Marhen system.

The reason for the reduced speed is to give the leuco (reduced) dyestuff more time to diffuse into the rayon fibers before oxidation takes place. The range consists of a pigment pad, two Williams units for reduction, a spray-type rinse box, and two more Williams units for neutralization and oxidation. Ahead of each nip is an expander roll, and after each nip is a set of compensating rolls.

Comparisons of cost and personnel requirements compare favorably for the Genray system against the pad-jig system. Initial cost of essential equipment is about the same.—Textile World, Aug, p104

New Coating Process Traps Full Flavor

Most recent development in the crusade for finer flavors for packaged goods is the so-called "Sealva" process for hermetically sealing volatile products against the deteriorating effect of time and atmosphere.

The results obtained thus far with this new method in full-scale commercial use indicate that it is an important step in the continuing search for improved flavor. Products made by the new process have already shown interesting possibilities in the fields of package desserts, prepared mixes, and confections, as well as in proprietary medicines.

Basically, the process consists of forming the liquid flavor into minute droplets, which in turn are coated with a controlled thickness of natural gum.

The gum is impervious to oxidation and evaporation as long as the product is maintained in a relatively anhydrous state, yet it is instantly dissolved in water. The seal is effective for 6 months before breaking down.—Food Eng, Aug, p94

Braided Electrodes

Inert-gas arc-welding process usually employs, as the electrode, a long wire wound on a reel. Thus the process has been limited to materials ductile enough to permit winding.

Air Reduction Sales Corp. has now reported a solution to the problem: braided or stranded electrodes. To make an electrode of aluminum-bronze (which is brittle with over 10% aluminum), wires of aluminum, copper, and low-carbon steel are braided together. When the braided electrode melts in the arc, the elements mix and form the alloy desired.—Prod Eng, July, p208

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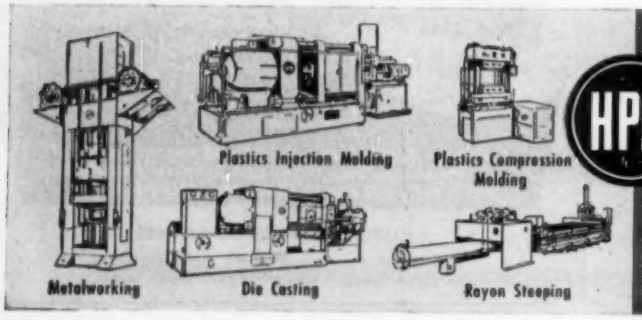

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MANAGEMENT REPORT

Honeywellers, 150 of them, have gone back to school to learn to read. These employees of Minneapolis-Honeywell Regulator Co. are technicians and supervisors. For them, reading efficiency is of top importance. The average man behind a desk these days has to plow through the equivalent of a fair-sized novel each day. And it takes a lot of valuable time to do it. So reading efficiency classes aim to speed up the reading rate and thus save time.

It's an idea that may prove useful in your company, especially if your people always seem buried behind a pile of papers. Another advantage: a reading course would also help your employees get more information out of what they do read.—Am Business, July, p43

If you were faced with a problem of low production, as Drayer-Hanson, Inc., of Los Angeles was, what would you do? The job was a contract for 10,000 aluminum "drop" fuel tanks for U. S. Navy airplanes. The problem was a disappointing daily output of only 18 to 22 tanks per day.

Drayer-Hanson turned to incentive. It offered a group bonus plan based on precise time studies from which allowed times were computed. The bonus was a percentage of time saved—the difference between allowed and actual productive times. Results were an output increase to 65 tanks per day and a wage increase of about 25%.—Weld Eng, Aug, p32

Before Crest Co., Edgefield, S. C., installed a 75,000-gal. gravity water tank, the fire-insurance rate was $25.50 per $1,000 plant valuation. Now its $5.10. A system of 600 automatic sprinklers protects 32,000 sq. ft. of floor area against fire. Savings in premiums will pay for the entire cost of tank and water sprinkler system in 7 years.

It's something to think about when your fire-insurance bills come due. And in suburban locations, statistics say your unsprinklered plant has a poor chance for survival in case of fire. City plant records are not much better. Remember, replacement costs come high.—Factory, Aug, p130

If you are an average owner of construction equipment, there is something you should know and correct in a hurry. Out of every ten engines you have working for you, four are running under improper conditions. But there is a way of telling whether your equipment is on the verge of breaking down and, better yet, a way to correct the improper running conditions—without guesswork.

By analyzing oil samples taken from engine crankcases, chemists and chemical engineers of Preventive Maintenance Service, Inc., can determine exactly what is wrong with a particular engine and prescribe appropriate treatment, should it be required. If the equipment is operating satisfactorily, PMS keeps a running check on it to maintain peak performance and catch minor malfunctionings before they turn into disasters.—Eng News-Rec, Aug 13, p110

Employee trainees at Boeing Airplane Co.'s Seattle, Wash., plant are getting practical experience and producing useable articles at the same time. The company's training plan maintains interest, matches production problems to articles that would otherwise have to be purchased, and salvages considerable material from the company's scrap pile.

Last year, more than 53 different kinds of metal products were turned out by the trainees—a total of 11,395 items for use in Boeing's offices and shops. Products included wastebaskets, wire reels, file dividers, letter files, dust pans, and a lunch cart. The articles are stocked in various departments and are obtainable throughout the plant without charge on order from a catalog.—Aviation Wk, July 20, p43

If your engineers get ideas that seem entirely fantastic and far-fetched, don't be too fast in stopping all work on them. They may be good.

Consider this one: A patent assigned to Phillips Petroleum Co. covers use of a turbine to carry on chemical reactions. The turbine acts as the reaction chamber and at the same time develops power from liberated reaction energy. The method is applicable to chemical processes involving high pressures, high-temperature gas, or vapor-forming reactions of the exothermic type. One possible use: to make hydrogen fluoride from hydrogen and fluorine.—Chem Eng, Aug, p348

Smart top management is turning to motion pictures to train personnel, to sell goods. Suppliers of capital goods, as well as manufacturers of consumer goods, have been promoting their products by film. A third group is now realizing the potential of films—job foundries, forge shops, machine shops, and other fabricators.

How much do films cost? Average motion picture costs are $1,000 to $1,250 per min. of running time. Sound slide films cost about $350 to $500 per min., or about $50 to $75 per single picture. You can spend more by adding such things as expensive animation, or less by avoiding "location" shots.—Iron Age, July 16, p69

PRODUCTION IDEAS

from Manufacturers' Catalogs

Boring Machine—Illustrations and data on connecting rod precision boring machines and their accessories are given in bulletin. — MatraWerke G.M.B.H., Frankfurt/Main, Germany

Cutting Machine—Folder describes the DeWalt '400' safety power fed machine that can perform the operations of seven power cutting machines.—American Machine & Foundry Co., Int'l Div., 485 Fifth Ave., New York, N. Y.

Purifiers—Bulletins 400 and 401 cover internal downflow Hi-eF purifiers and their applications.—V. D. Anderson Co., 1935 West 96th St., Cleveland 2, Ohio.

Fork Trucks—The X-70 fork truck is featured in the Materials Handling News. Bulletin also covers other industrial trucks. — Clark Equipment Co., Export Div., Battle Creek 73, Mich.

Plate Magnets—Brochure B-603 explains industrial applications of permanent non-electric Model C plate magnets.—Eriez International Corp., Erie 2, Pa.

Automotive Hoists—Car and truck hoists and their accessories are illustrated in catalog 53.—Globe Hoist Co., 1000 E. Mermaid Lane, Philadelphia 18, Pa.

Voltage Stabilizers—Booklet GEA-5754 contains photographs and diagrams of automatic voltage stabilizers ranging from 15 to 5,000 volt-amperes.—International General Electric Co., 570 Lexington Ave., New York 22, N. Y.

Screw Conveyors—Comprehensive information on screw conveyors and screw feeders is provided in booklet 2289.—Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.

Sprinkler Irrigation Pumps—Bulletin SI-53 covers design, operational and application features of portable engine-driven pumps, electric-motor-powered pumps, and pumps designed for belt drive. — Marlow Pumps, Ridgewood, N. J.

Refrigeration Compressors—Hermetically-sealed refrigeration compressors and condensing units of 75- to 100-hp. capacity are described in bulletin DB 101-160.—Westinghouse Electric International Co., 40 Wall St., New York 5, N. Y.

Mine Fire Truck—Bulletin 1203-1 pictures and describes the mine fire truck and its special features.—Mine Safety Appliance Co., Pittsburgh 8, Pa.

Profilometer Equipment — Catalog illustrates and gives specifications of profilometer equipment that measures surface roughness height in micro-inches.—Micrometrical Mfg. Co., 345 South Main St., Ann Arbor, Mich.

Lift Truck—Specifications of the XA60 lift truck of 6,000-lb. capacity are given in form 1231.—Hyster Co., 2902 N. E. Clackamus St., Portland 8, Oregon.

Construction Materials—Catalog covers brick work, caulking, concrete, exterior surfaces, floor treatments, interior paints, and masonry.—A. C. Horn Co., Inc., 10th & 44th Ave., Long Island City, N. Y.

Diesel-electric Locomotives — Folder gives general specifications of 12 Baldwin-Westinghouse standard-model locomotives for export.—Baldwin-Lima-Hamilton Corp., Philadelphia 42, Pa.

Mining Tools—Mining tools for cutting coal and drilling rock are described in catalog M-6.—Kennametal, Inc., Latrobe, Pa.

Laminated Plastics—"This is Taylor Fibre Co." describes the company's products and their manufacturing methods and facilities.—Tayor Fibre Co., Norristown, Pa.

Lubrication Equipment—Centralized lubrication systems for metalworking, textile, mining, food processing, paper, chemical and construction industries are covered in catalog 80.—Lincoln Lubricating Equipment, 5701 Natural Bridge Ave., St. Louis 20, Mo.

Industrial Logistics—The logistics of boxes, bags, barrels, and bales and the use of Elwell-Parker lift trucks are dealt with in four bulletins.—Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 14, Ohio.

Tandem Rollers—Bulletin T-152 describes the construction and functions of variable-weight tandem rollers for road construction work.—Huber Mfg. Co., Marion, Ohio.

Safety Equipment—A complete line of protective equipment for welders is described in catalog C-781. It includes goggles, helmets, face shields, and clothing.—American Optical Co., Southbridge, Mass.

Reinforced Alkyd—Bulletins A-10, A-12, and A-13 describe the physical properties of Plaskon fiber-glass reinforced Alkyd and its molding properties.—Plaskon Div., Libbey-Owen-Ford Glass Co., 2112-24 Sylvan Ave., Toledo 6, Ohio.

Centrifugal Castings — Thermalloy centrifugal castings and their applications are described in folder.—American Brake Shoe Co., 230 Park Ave., New York 17, N. Y.

Locknuts—Security locknuts are described in bulletin. Circular chart gives thread pitch diameter tolerances for fine and coarse threads.—Security Locknut Corp., North Ave. and 15th Ave., Melrose Park, Ill.

Bucket Elevators—Specifications and drawings of many types of bucket elevators are given in catalog 850.—Jeffrey Mfg. Co., Columbus 16, Ohio.

Steam Cleaner — Folder describes Service Master steam cleaner for service stations, garages, repair shops, small industrial plants, and farms.—Hypressure Jenny Div., Homestead Valve Mfg. Co., Coraopolis, Pa.

Pipe Protection—Bulletin covers characteristics and uses of Vitron underground pipe wrap for protecting steel pipe from corrosion.—Glass Fibers, Inc., 1810 Madison Ave., Toledo 2, Ohio.

Vinyl Plastic—"Geon in the Wire and Cable Industry" gives data on the properties of polyvinyl chloride for various applications.— B. F. Goodrich Chemical Co., Rose Building, Cleveland, Ohio.

Shaker-hearth Furnace—Use, construction, and operation of type M-0534-S shaker-hearth furnace is described in bulletin HD-850.—Hevi Duty Electric Co., 4212 W. Highland, Milwaukee, Wis.

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. . . to the manufacturers for the free literature announced on this page. Tell them definitely which catalog you want—specify the catalog number or its name when either one is given. And mention that you saw the offer in the McGraw-Hill Digest.

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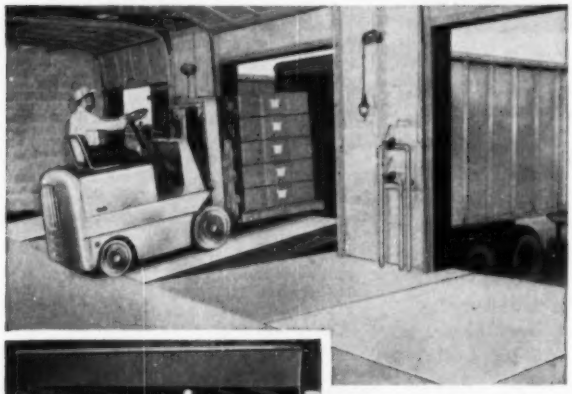

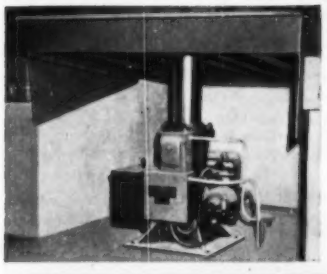

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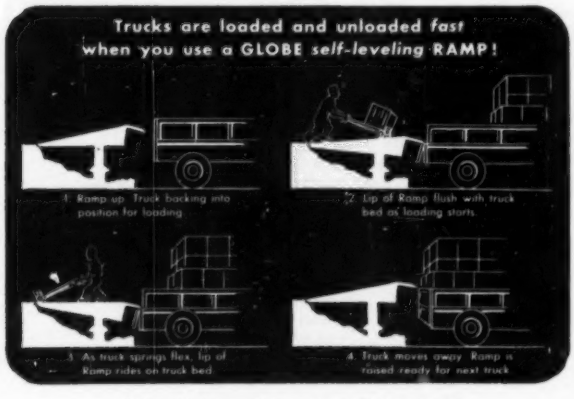
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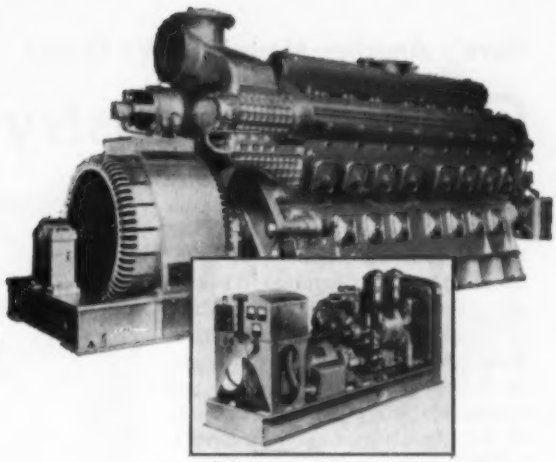

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W. Alec Jordan
Editor, Chemical Week

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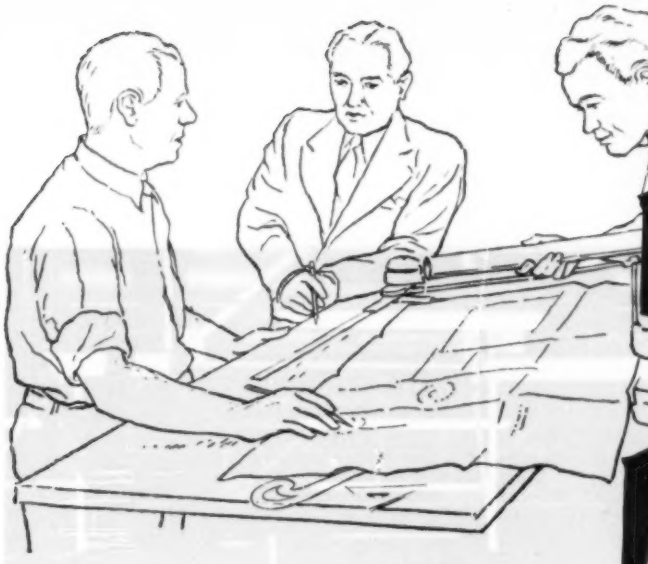

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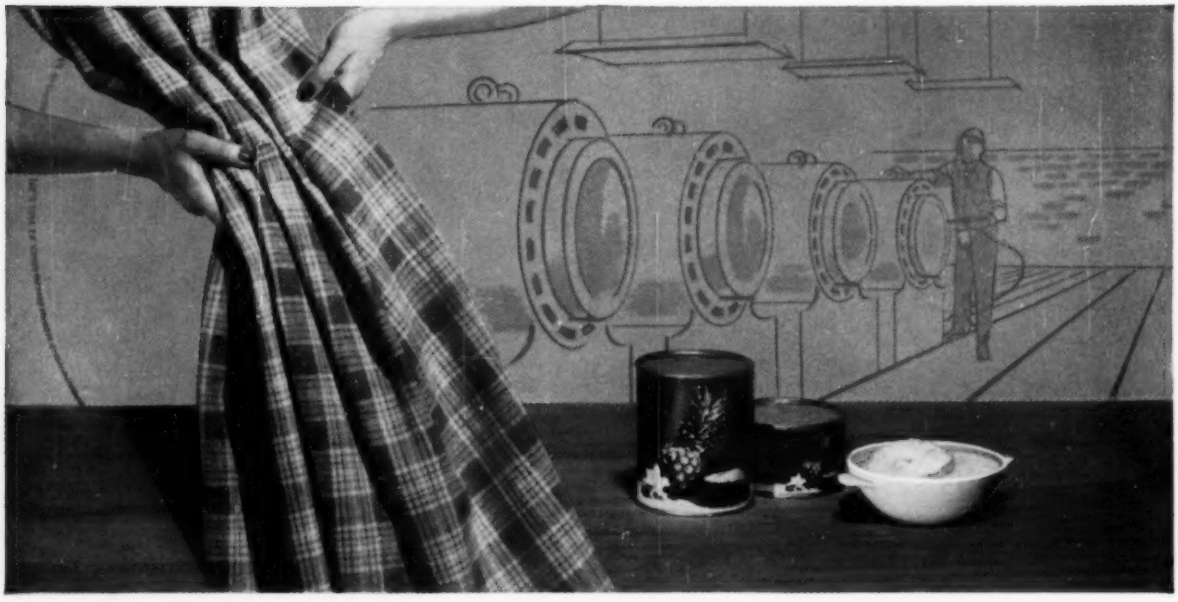

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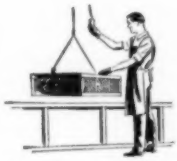

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